

THE IRON AGE

THURSDAY, APRIL 2, 1891.

The Cramp Purchase.

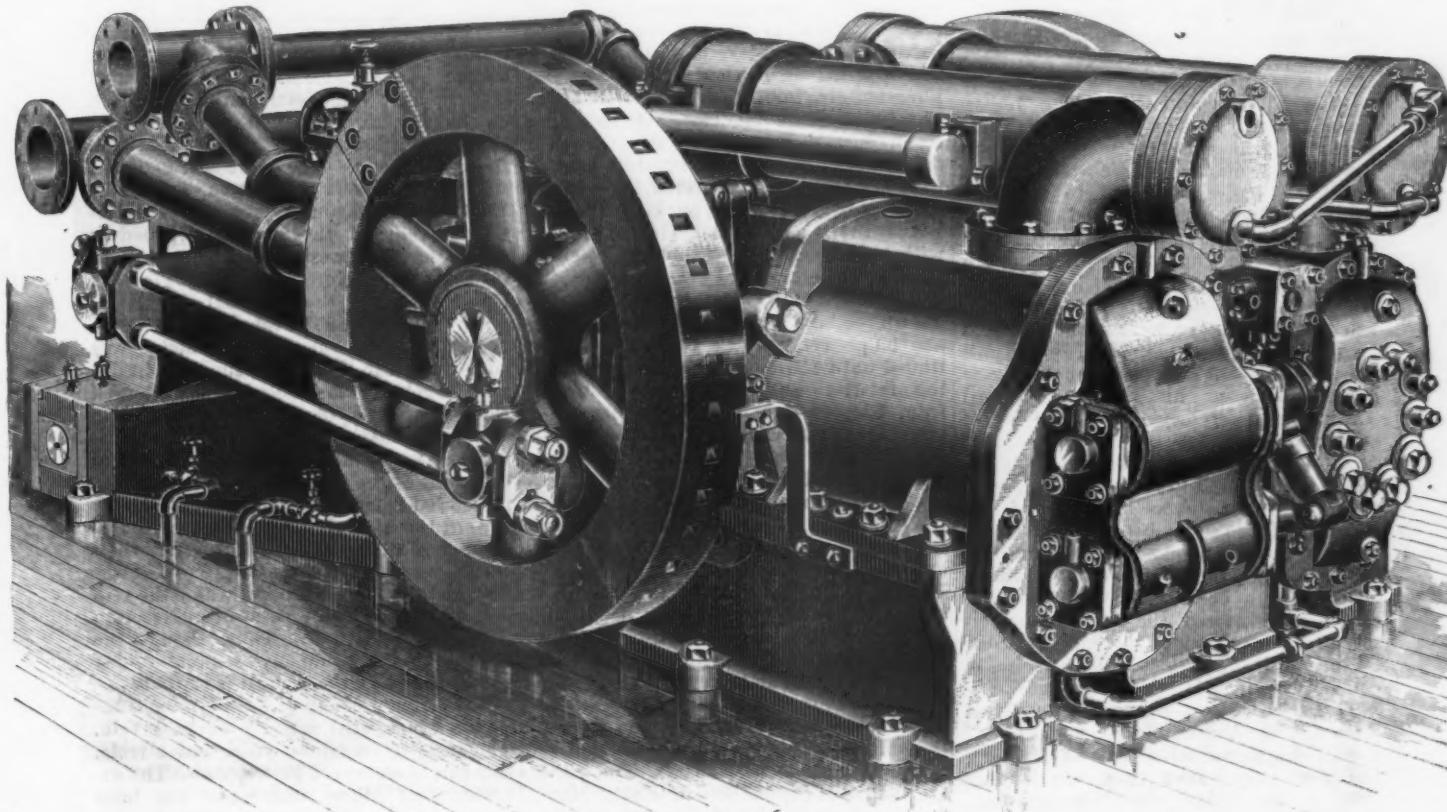
The William Cramp & Sons' Ship and Engine Building Company have purchased the great Port Richmond Iron Works of the I. P. Morris Company. The formal transfer has not yet been made, but the negotiations have ended and the consideration, which is said to be a large one, agreed upon. By this deal the Cramps secure one of the largest iron works in the country, on the river front, adjacent to their own great shipyards. Many changes have taken place by way of development of the works, which make their history extremely interesting. The pioneers were Levi, Isaac P. and Joseph P. Morris, who commenced business under the firm name of Levi Morris & Co., at Market street and

under that title as a stock company. The officers of this company at the present time are: John T. Morris, president; James B. Thompson, treasurer, and William P. Thomas, secretary.

Engineer Sterne of London, England, projector of the new underground tunnels in the English metropolis, and Charles M. Jacobs, engineer of the Metropolitan underground system in New York, addressed meeting of citizens in Boston in advocacy of the introduction in that city of the Greathead system of excavating tunnels for transit purposes. The estimate of the cost of tunneling Boston is \$2,000,000 a mile. Engineer Jacobs stated that in coal mining in America there is taken out of

Air Compressor for U. S. Monitor Terror.

In modern marine engineering compressed air plays a most important part. Throughout the ship it is employed to furnish power, is used as a cushion, and as a refrigerating medium. The engraving presented on this page represents one of two compressors put in the U. S. monitor Terror by the Norwalk Iron Works of South Norwalk, Conn. On this vessel compressed air will be used to load the guns, turn the turrets, take up the recoil of the guns and return them again into battery, steer, refrigerate a cold storage room, and generally take the place of steam in the



AIR COMPRESSOR, BUILT BY THE NORWALK IRON WORKS FOR U. S. MONITOR TERROR.

Schuylkill Seventh, where Morris, Wheeler & Co.'s place now is, in 1828. In 1834 Lewis Taws, who became well known as a practical iron man, became a partner, and upon the retirement of Levi Morris, in 1841, the firm name was changed to I. P. Morris & Co. In 1847, the Market street place not being adequate to the business, the present site at Port Richmond was secured. In 1847 John J. Thompson became a member of the firm, and in 1862, upon the admission to partnership of John H. Towne, of Towne Scientific School fame, the firm name was changed to I. P. Morris, Towne & Co. On the retirement of Mr. Towne, in 1868, the old name, I. P. Morris & Co., was resumed. Although several changes, occasioned by the death of partners or the admission of others to membership, occurred after this, the name of I. P. Morris & Co. was continued until 1876. In that year the I. P. Morris Company were incorporated, and since then the business has been carried on

the ground every 20 days an amount of material equal to that required to be excavated to construct the largest tunnel system yet proposed, and that with a sufficient number of shafts the work in New York could be executed in 12 months.

The New York State Board of Arbitration submitted to the Legislature a report on the lockout of cutters by the Clothiers' Exchange of Rochester, in which they say: "It is suggested that, in so far as the laws of the State fail to protect employers and employees alike in their prerogative of equal right to buy or sell the use of skill and labor, they are deficient and at fault, as not 'conducive to harmonizing the relations of and disputes between employers and the wage-earning masses,' or to the 'improvement of the present system of production,' and should be amended to those most desirable ends set forth by the Legislature itself in the act quoted."

power distribution. The two machines are of 250 horsepower each. The intake air cylinders are 28 inches diameter; the compressing cylinders 17½ inches. There is provision in the compressor to carry air pressure as high as 2000 pounds should that pressure be needed for dynamite guns or for charging torpedoes. One of the noteworthy features of the machine is the extremely small space taken for such large and powerful compressors. They go "tween decks," where the head room is only 5 feet. Their length was restricted to 14 feet 4 inches, and the width to 8 feet 8 inches. There are many novelties in the details of the design, which we expect to illustrate in an early issue. The general plan employed is the compound system so long successfully used by the makers. The Norwalk Iron Works also built the compressors on the U. S. dynamite cruiser *Vesuvius*, which machines produce air of 2500 pounds pressure.

OUR COPPER RESOURCES.*

BY JAMES DOUGLAS, NEW YORK CITY.

The development of the copper resources of this country has kept close pace with the unfolding of its geographical area to commerce. In colonial days, when our English ancestors occupied only the Atlantic seaboard, insignificant quantities of copper were mined in Connecticut, New Jersey and Pennsylvania, and the ore was shipped for treatment to England. The first steam pumping equipment erected in this country was probably that used by Josiah Hornblower, in the year 1753, at the copper mines at Belleville, N. J., almost within sight of this city.

That copper in the native state existed on Lake Superior was mentioned in the *Relations des Jesuites* as early as 1659 or 1660. The Rev. Claude Allouez described a stray mass in 1666. But it was not until 1771, a little more than a century later, when this region had passed from the dominion of France to that of Great Britain, that Alexander Henry organized a company in England, with the Duke of Gloucester, Charles Townshend and other notables as incorporators, to mine copper on the Ontonagon River, the region whence came the stray blocks which had grown so famous by repeated mention in the *Relations* and by the reports of various travelers. Failing, in 1771, to find the copper in place, Henry renewed operations in the following year on Michipicoten Island, on the north shore, but only to score another failure. What little copper ore he raised was shipped to England, where ship and cargo were seized and sold for the company's debts. Mr. Townshend's losses in his Lake Superior venture may have embittered his feelings toward America, and perchance have been one of the indirect causes of the unreasonable financial policy towards the Colonies which precipitated the revolutionary war, and for which he, as president of the Board of Trade and subsequently as Chancellor of the Exchequer, was responsible.

Then stagnation followed for three-quarters of a century. Even if no other cause had interfered, the unsettled ownership of the lake region must have retarded mining until the date at which it actually commenced, in 1844. For it was not until 1796 that Michigan was ceded by Great Britain to the United States; not till 1837 that Michigan was admitted to Statehood, and not until 1842 that the Indian titles to the lands were extinguished. Meanwhile steamers had replaced canoes on the lake, and in 1841 Dr. Houghton had given the world the first authentic and scientific account of the geological structure of the Keweenaw series of rocks and of the mode of occurrence of their native copper. In 1844 the Cliff Mine was opened, and in 1845 lake copper appears as an item in the world's production. That in those days our copper enterprises were in an infantile condition is shown by the fact that although in 1850 the lake produced only 570 tons, yet that small quantity was over 88 per cent. of the total production of this country. Leplay, Secretary of the Commission of Mining Statistics in France, estimates the world's production at that date at 52,400 tons, and assigns to this country a consumption of 6100 tons, which was supplied by about 5500 tons of imported and 600 tons of domestic copper.† After 1850, and until the yield of the Calumet and Hecla Mine began to be felt, in 1867, the relative production of the lake region fell off, owing

to the appearance successively of Vermont, the Southern States and California in the list of producers. Vermont copper came almost entirely from the Ely Mine, in the Vershire district. This mine was discovered in 1820, but began to be worked only in 1850, and thenceforward yielded from year to year an increasing quantity, till 1880, when its output amounted to 3,186,175 pounds. It was closed in 1882, but is now being re-opened. By far the largest producer in the Southern States during this period was the Ducktown group of mines, in Tennessee. Discovered about 1846, systematic work was begun in 1850, and before 1854, when smelting works were erected at the mines, over 14,000 tons of very rich sulphurets had already been shipped. The experience gained there was used in discovering and working similar ore masses in North Carolina, Virginia, Georgia and Alabama, most of which yielded at this period no more than trifling quantities, but sufficient in the aggregate to swell the total, which nevertheless remained insignificant. California, during this period, shipped more copper than she has shipped since. Her export of ore in 1864 reached 14,315 tons, chiefly from the Union and Campo Seco mines of Calaveras County, which were opened on lenticular masses of sulphureted ore imbedded in talcose slates. The Union Mine was closed in 1866, but was reopened three years ago. Thus it came about that the percentage coming from the lake region declined from 96 per cent. in 1849 to 68.08 per cent. in 1866. But in 1867 Calumet and Hecla appeared with a shipment of 603 tons, followed in 1868 by 2276 tons, and year after year by an ever-increasing contribution, thus keeping up the lake percentage to between 80 and 90 per cent. of the total. This continued until 1881, when a sudden fall of the relative Lake Superior production from 82 per cent. to 76.01 per cent. marked the advent of her Western rivals.

Up to that date the line of the Union and Central Pacific railroads had offered the only through and direct route across the continent, and it happened that along that route no large copper deposits existed. But simultaneously, in 1881, the Union Pacific road reached the neighborhood of Butte, Mont., by its Utah and Northern branch, and the Southern Pacific road completed the laying of its track through Arizona and New Mexico. Previous to this the Longfellow Mine at Clifton, Ariz., had been worked, and its copper bullion carted 700 miles to the nearest railroad terminus in Kansas. The richer argentiferous copper ores of Butte, Mont., had also been hauled a distance of more than 400 miles to Corinne, on the Central Pacific Railroad. But mining operations were necessarily restricted in each district to exceptionally rich ores until the arrival of the railroad introduced mineral fuel. Arizona and Montana immediately responded to the stimulus of cheap transportation, and mining and smelting on an extensive scale commenced in the extreme south and the extreme north of our wide Western domain. The next event which marked a stride in our progress toward pre-eminence in the copper world occurred in 1883. It was the discovery of large bodies of copper ore in the Anaconda Mine, the central and culminating point of the immense Butte lode. With a bound this great mine sprang into second place in the rank of production, and within five years overtook and passed its great competitor, the Calumet and Hecla. Since then the growth of production in both the lake region and the West has shown no abatement, but the relative increase has been in favor of Butte and against the lake.

In 1881, therefore, these three sources of supply—namely, the native copper deposits of the lake region, the oxidized ores

of Southern Arizona and the sulphureted ores of Montana—constituted our chief resource, and they remain so to-day. In 1889 our total production was divided as follows:

	Per cont.
The lake region.....	35.81
Montana.....	43.07
Arizona.....	13.34
All other native ores.....	5.69
Imported ores.....	2.09
Total.....	100.00

Lake Superior.

In reviewing Lake Superior mining we find that three groups of mining companies have been successively formed, and that each group began operations on a separate one of the three distinct forms of deposit in which copper occurs in the rocks of the Keweenaw series. The first group of companies worked veins in search of mass copper; the second group worked the ash beds of Keweenaw County and their equivalent amygdaloid beds in the Portage district, and the third group of companies worked the conglomerate beds.

MASS MINES.

The only mine of the first group now producing any considerable quantity of copper is the Central. The Cliff, which was the first mine systematically worked on the lake, having begun to produce copper in 1844, has yielded very little within the past decade. The same is true of the still more famous Minnesota, opened in 1848 in Ontonagon County on an interbedded vein; of the Phoenix, opened in 1844; the Northwestern and Copper Falls in 1845; the Northwest in 1847; the Ridge in 1850; the National and Evergreen Bluff in 1853; the Mass in 1856, and of a host of small mines which never added much to the copper supply, but did add largely to the assessment roll. All these companies commenced operations in search of mass copper either on the transverse veins of Keweenaw County toward the point of the promontory, or on the interbedded veins of the Ontonagon country toward the base of the promontory. The Copper Falls Company, failing in their quest, turned their attention to one of the amygdaloidal beds through which the vein cut, and which at the point of intersection seemed to enrich it. Thus, though the Copper Falls Company remain to-day small producers, the Central is the only one of the original group of mass mining companies which still actively works a vein. The other mass mines yield but a trifle, and this is recovered by tributaries. The experience of other mass mines has been confirmed by the Central—namely, that the masses grow fewer as depth is attained, and that they are distributed in the veins in no regular or assignable order. The Central may not have produced as many large masses as the Cliff and the Minnesota, but it yielded at least one even larger than the famous 500-ton mass of the latter mine. It consisted of a nucleus from which 600 tons of copper were cut, and a number of subordinate masses that were connected with the central mass by distinct filaments. The total amount of copper yielded by this series of related masses was about 1200 tons. Even in its most prosperous days the product of the Central was about evenly divided between mass and stamp copper. The vein varies in width from a mere seam to 25 feet, and the productive shute of ore below the 900-foot level does not average more than 300 feet in length. The possibilities for a large production do not, therefore, exist if operations are confined to this vein alone; but exploration for other veins is being vigorously pushed. The mine has reached the thirty-first level—a vertical depth of 2900 feet. Above the thirtieth level (2800 feet deep) the vein was shattered in passing through

* Read at the New York meeting of the American Institute of Mining Engineers.

† Foster and Whitney Report, Part I, Copper Lands, p. 157.

a bed of amygdaloid, and on that level was completely obliterated by an underlying bed of conglomerate. Fears were entertained that the bottom of the mine had been reached, but recently the vein has been cut in sinking the shaft below the 2800-foot level. It was thrown 240 feet to the west. Where rediscovered it is of average size of productiveness. The mine has yielded over 20,000,000 pounds of copper, and has proved so profitable from the start that even the first year's expenditure was repaid by the first year's returns. Though the vein has generally been narrow and the yield on the average only 1.9 per cent., the management has been so excellent and the cost of extraction so low that dividends amounting to \$2,000,000 have been paid on a capital of \$100,000.

AMYGDALOID MINES.

The second group of companies was formed to work the ash beds of amygdaloidal diabase, which, though traceable throughout the whole length of the Keweenaw series of rocks, appear to be richer in copper on the shores of Portage Lake than elsewhere. As already remarked, the Copper Falls (a mass company) diverted their attention early in 1851 to the working of an ash bed. Although the extravagant hopes which were based upon excessive estimates of the yield of the ash bed were not realized, this company's endeavor stimulated speculation and honest work on the amygdaloid beds of Keweenaw County and of Portage Lake district. Many companies were speedily organized for the purpose of developing these properties. Contrary to the fate of the mass companies, most of them have maintained a more or less vigorous existence to this day. Of the companies which appear in the list of producers within the past decade, the following belong to the second group and date back their beginning to the second period of lake mining between the years 1850 and 1865:

Isle Royal Company, who commenced work in 1852.

Grand Portage Company, who commenced work in 1853.

Sheldon and Columbian Company, who commenced work in 1853.

Pewabic Company, who commenced work in 1853.

Huron Company, who commenced work in 1855.

Quincy Company, who, though organized in 1848, commenced active work only in 1856.

Franklin Company, who commenced work in 1857.

Albany and Boston Company, who commenced work in 1860.

South Pewabic Company (now the Atlantic), who commenced work in 1865.

The Kearsarge and Wolverine are the only mines recently opened on an amygdaloid bed in the Portage district. The former made its first return of 829,125 pounds of copper from a rock yielding 1.02 per cent. in 1888.

Of this group of mines by far the most remunerative has been the Quincy, but the one which exhibits the most extraordinary minimum cost of production is the Atlantic. These mines are situated on opposite sides of Portage Lake. The Quincy crowns the summit of a hill which rises boldly from the lake at the point where the town of Hancock seems with difficulty to be climbing up its steep slope. The Atlantic is on the southern shore of the lake, to the southwest of the Quincy and on a more westerly bed. Both mines are in a rock which is similar in appearance and structure. The Quincy amygdaloid differs from the Atlantic, however, in that it carries 40 per cent. of its copper in masses and what is known

as "barrel work"—that is, metal in blocks so coarse that the earthy matter can be separated under the hammer without dressing. It can, therefore be hand sorted. Nearly all the Atlantic rock passes without selection through the stamp mill, and the product is almost exclusively "stamp work." The Quincy bed, as might be anticipated from the mode of occurrence of its copper contents, is more variable in size and yield than the Atlantic, which, though much poorer, is remarkably uniform in its percentage. Quincy rock, as delivered to the mill, yields on an average about 2 per cent. of metallic copper; the Atlantic only 0.75 per cent., which this year fell to 0.60 per cent. Both mines are worked to a great depth; the Quincy's lowest level is 3900 feet on the incline, and the Atlantic's 1600 feet. In both mines the rock is easily broken, but the character, uniformity and width of the Atlantic bed allow it to be extracted more cheaply than the Quincy. The Quincy has to be sorted at the surface, whereas the Atlantic ore goes without handling to the mill. Both the mining and concentrating of the Atlantic ore can, therefore, be carried on at lower cost, and this partially offsets its greater leanness. Yet nothing but most excellent management has brought down the total cost of mining, raising and concentrating the ore, of delivering the concentrate to the furnace and smelting it, and of transporting to market and selling the refined copper, to \$1.43 per ton of rock treated. That was the figure in 1888. In 1889 it was \$1.53. The Quincy has just completed a new and well equipped three-stamp mill with a capacity of 180,000 tons a year, which will enable it to increase its output of copper beyond the 3200 tons limit of 1889. The Atlantic will probably remain steady at about 1800 tons of copper produced from 280,000 tons of ore. I have selected for comparison these two typical amygdaloid mines without disparagement to others, such as the Osceola, which are paying dividends out of rock yielding little more than 1 per cent. of copper.

(To be continued.)

The American Wire Nail Company.

The pioneers in the manufacture of wire nails in America were the American Wire Nail Company, incorporated at Covington, Ky., in 1873. Their first plant was a small one, and for many years its growth, while gradual, was but slow. The real development of the wire-nail business has practically occurred since 1886, and in this later development the American Wire Nail Company have played an important part. About two years since they removed to Anderson, Ind., in order to secure better facilities for manufacturing, chief among which is a supply of cheap fuel. On their removal to Anderson the plant was greatly enlarged, and now comprises a rod-rolling mill, a wire-drawing works and a wire-nail factory.

The location at Anderson is exceptionally advantageous. The company have their own gas wells and operate the entire plant with natural gas, which reduces their fuel account to a minimum. Thus far they have not observed any diminution in the supply of gas from their wells, but they arranged the plant when it was built with a view to use coal for fuel should that ever become necessary. They are so near the Indiana coal fields that they can secure coal at less than \$1 per ton delivered at their works. At the same time they are within easy reach of both the Ohio and Indiana oil fields should they desire to use oil for fuel. Transportation facilities are most excellent for reaching both the East and the West. The works

are located directly on the Cleveland, Cincinnati, Chicago and St. Louis Railway, known as the Big Four, also on the Midland and on a belt line which connects with all the other railroads running into Anderson, which is now quite an important railroad center.

The entire works of the company are now in active operation. The rod mill, which is of the Garrett type, is doing remarkably good work, turning out an average of 175,000 pounds per shift, while it has made a record of 203,000 pounds. The roughing and finishing trains are separated in this mill, but are run by the same engine, which is geared directly to the roughing train and belted to the finishing train some distance in its rear. Two heating furnaces, each making four heats, are in constant use. Four-inch billets are worked. The finishing train at present runs two rods at once and sometimes three, but additional boilers are now being put in to supply the necessary steam to run three rods regularly, which will materially increase the output over the figures given above. The reels used are of an improved pattern over those heretofore employed. They are four in number and run horizontally, located at the extreme end of the finishing rolls. An operator controls them from a platform above.

As soon as a reel is filled the operator pulls a lever, which allows the coil to drop off the reel, when it is seized by a workman, who runs it by an overhead railway to the side of the mill near the wire works. The wire mill is an extensive building, 280 by 80 feet, containing 50 blocks and affording ample room for all operations. The cleaning and annealing department is in one end of this building, where the rods are received from the rod mill. At the other end of the building the wire-nail factory is located. It contains 88 machines, which make all sizes and kinds of wire nails. This description shows the convenience of the plan on which the works have been arranged. Everything moves forward continuously from the raw material to the finished product. The output of the rod mill is at present in excess of the finishing departments. About half the product of rods is sold to other wire mills. The company are officered as follows: President, L. H. Gedge; vice-president, F. C. Gedge; secretary, C. P. Garvey; assistant secretary, C. H. Garvey; treasurer, E. J. Buffington; assistant treasurer, W. B. Thomas.

The Lehigh Zinc and Iron Company of Bethlehem, Pa., will shortly add to their capacity in manufacturing zinc oxide and spelter, by enlarging their works and by building another plant. The company have purchased a large tract of land lying along the Lehigh Valley Railroad south of the Northampton Furnace, near Freemansburg, Pa., and are now at work preparing to erect large works for the manufacture of spelter. The new plant will give employment to a large number of men. The work of erecting the plant will be rapidly pushed forward, and it is probable that it will be in operation in a few months.

The rifling of the 12-inch mortar has begun at the Watervliet Arsenal, West Troy, N. Y. The utmost precision is required in adjusting the apparatus which does the work. Work has also been begun on 25 field guns, known as 32-10 guns. Several of the smaller lathes are already in use on the preparation of projectiles, and others soon to be put in place will also be started on the same class of work. The arsenal is very busy putting in new machinery.

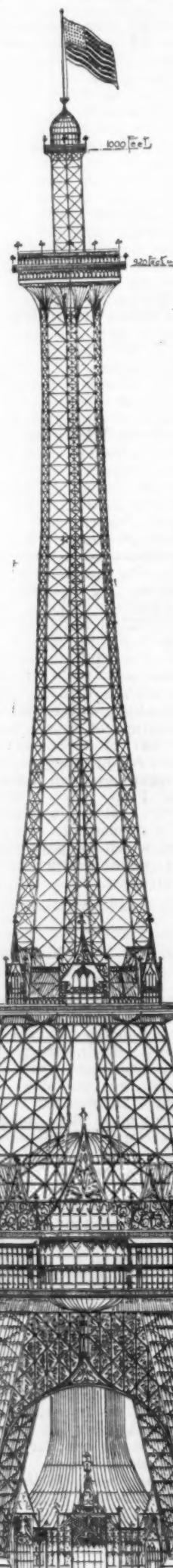
No progress has yet been made in the negotiation of a reciprocity arrangement with the Argentine Republic.

The Proctor Tower.

It is stated quite positively that the Proctor Tower will be built at Chicago, and will be a feature as conspicuous in connection with the World's Fair there as the Eiffel Tower was at the Paris Exposition. The designers of the Proctor Tower are Holabird & Roche, prominent Chicago architects, and the entire engineering work will be in charge of Corydon T. Purdy, 228 La Salle street. Contracts for the iron and steel required are expected to be let at an early day. Ten elevators will be required.

The Chicago *Graphic* has printed engravings showing the character of the structure, which we reproduce. Our contemporary refers as follows to the structure:

The Eiffel Tower was rightly considered a marvel of engineering skill, but the projected Proctor Tower, to be erected just outside of Jackson Park, at the head of the Midway Plaisance, excels it 150 feet in height, and is superior in architectural beauty, as well as in its special features. The bottom of the tower is composed of six substantial bases each 50 feet square, inclosing a surface of some 5 acres in ex-



THE PROCTOR TOWER FOR THE COLUMBIAN EXPOSITION.

tent. These bases rest upon a foundation of stone masonry, sunk 17 feet below the surface of the ground and resting upon hard clay.

A central space, some 400 feet square, will be elegantly floored and walled with marble, and within it will be located the huge engines operating the elevators and dynamos, the ground space at the sides being taken up with booths, refectories and the like. The elevators, which will move a central shaft, will ascend from the base to a distance of 1000 feet in two minutes' time. These elevators, ten in number, will be constructed and guarded in such a manner that accident will be impossible. Four of the cars will ascend to the second landing, and two will make the journey to the dome, 150 feet from the top. At this point an observatory will be located, containing telescopes, and, it is not unlikely, an exhibit of the signal service of the United States. The landing will inclose an area of 1225 feet, and will be protected, as will the other two, by a

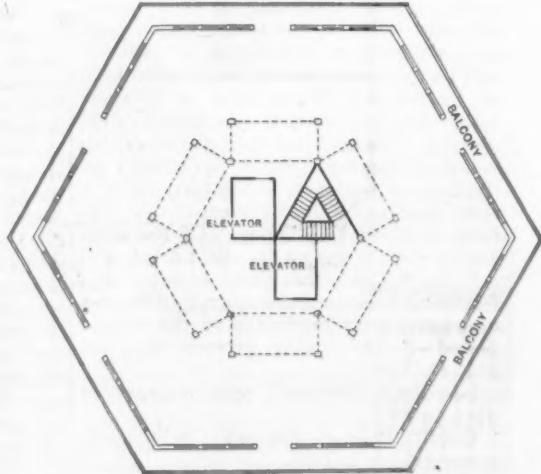
Ground Floor, Showing Elevator Enclosures.

to warrant the extension of invitations to this country for machinery exhibits, especially those of the agricultural class. The Boston *Journal of Commerce* suggests that our cotton gin makers look into this matter and see if there is not something in the affair that can be turned to profit. The American cotton gin is well thought of in the cotton-growing regions of the Russian empire. For the year ending June 30, 1890, we exported to Russia \$104,000 worth of agricultural imple-

ments, nearly one-tenth of which went direct to Asiatic Russia. How much more went by way of England is not known.

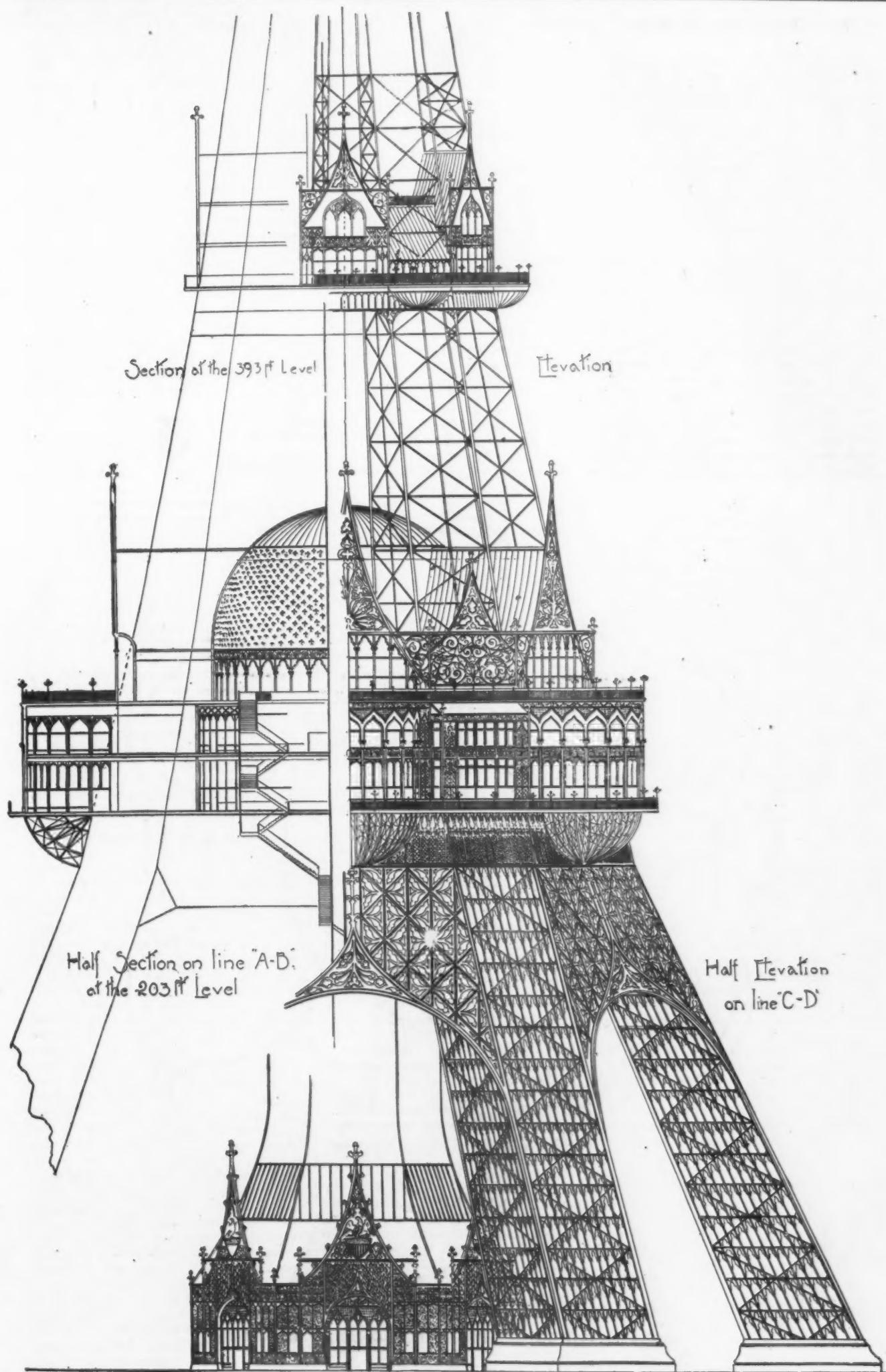
The lower portion of this stupendous structure will be of railroad iron and concrete, the superstructure will be entirely of steel, and will be shipped to Chicago in sections ready to be fitted together. Seventy-five hundred tons of steel will enter into the composition, and the plans have been submitted to some of the most eminent engineers of the world, and have received their cordial endorsement. The designer, David A. Proctor, will manage the enterprise, which, when completed, will stand as a monument unequaled in the world, and will no doubt be as successful a feature of the Columbian Exposition as the Eiffel Tower was of the Paris Exposition.

There is to be a Central Asiatic Exhibition at Moscow this year. It is expected to be of much local importance, sufficient



Floor Plan, 920 Feet Elevation.

C. W. Arny & Son, Philadelphia, have published a pamphlet treating of the factors and conditions required for the perfect transmission of power by belting. As manufacturers of belting of many years's standing they have been able to collect a fund of information on this subject which should be of value to all operators of machinery.

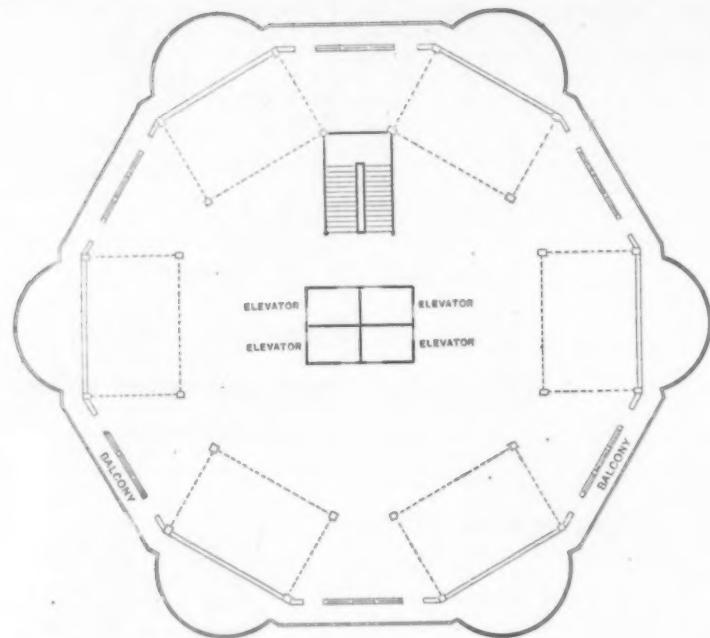


Sectional View of Base to a Height of 400 Feet.

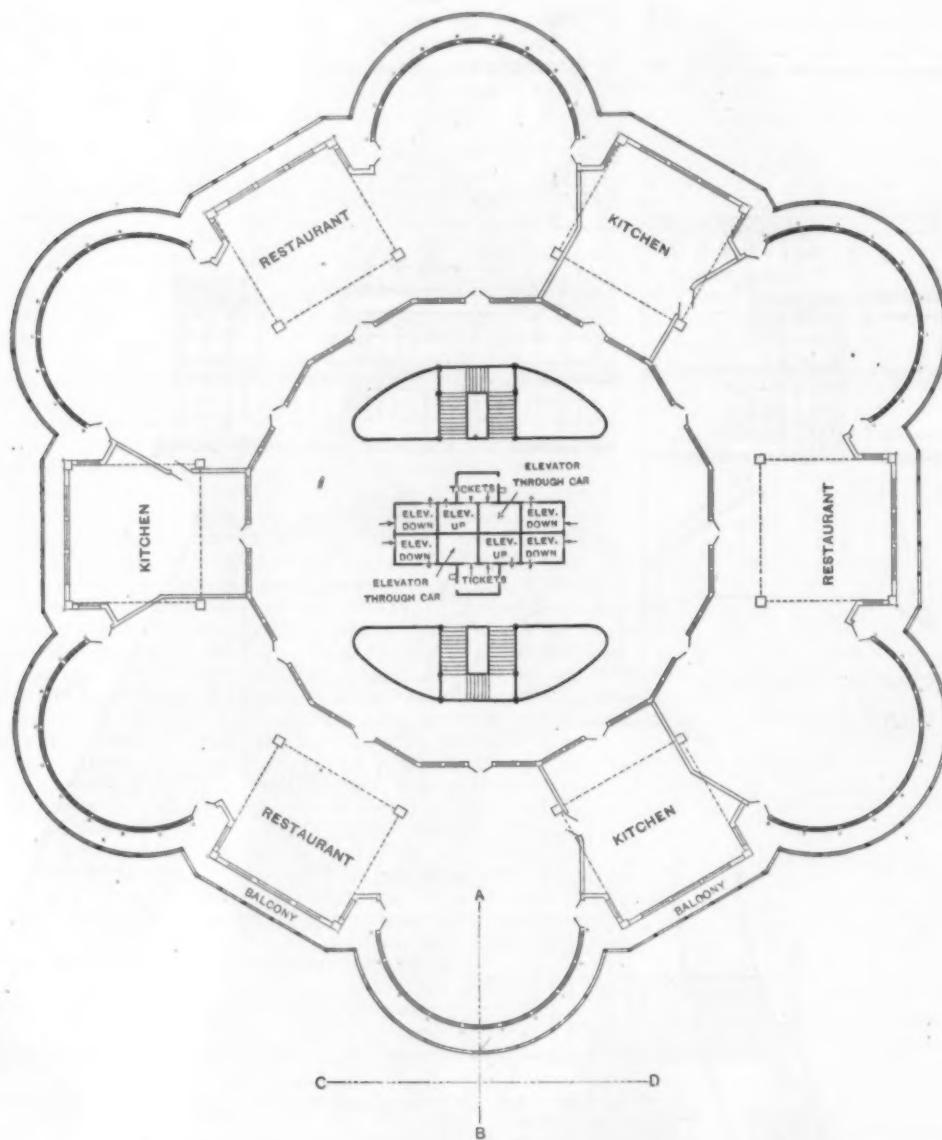
THE PROCTOR TOWER FOR THE COLUMBIAN EXPOSITION.

Low Through Import Rates.

The decision has just been published which was made by the Interstate Commerce Commission in the important case brought by the New York Board of Trade and Transportation, the Commercial Exchange of Philadelphia and the San Francisco Chamber of Commerce against all the trunk line railroads of the country, to restrain them from transporting imported merchandise from the ports of entry to interior places of destination at lower than the schedule tariff rates. An example of the facts found in the case shows that, the tariff rate on linens from Philadelphia to Chicago being 69 cents, a through rate was made from Dufermille, Scotland, to Chicago of 80 cents, of which 40.91 cents was the British rail and ocean rate to Philadelphia and 39.09 cents was the inland rate from Philadelphia to Chicago, being nearly 30 cents less than the schedule tariff rate; and again, on anvils, the rate being 33 cents from Philadelphia to Chicago, a through rate was made from Liverpool to Chicago of 26.79 cents, of which 8.42 cents was the ocean portion and 18.37 cents was the inland portion, being nearly 15 cents less than the tariff rate. On tin



Floor Plan at 400 Feet Elevation.



Floor Plan at 200 Feet Elevation.

THE PROCTOR TOWER FOR THE COLUMBIAN EXPOSITION.

plate, the rate from Philadelphia to Chicago being 28 cents, through rates were made from Liverpool to Chicago of 24 cents, 8 cents of which was the ocean rate

and 16 the inland rate, being 12 cents less than the tariff. This being unfavorable to American competitive traffic, the appeal was made to the Interstate Commerce

Commission to put a stop to the discriminating rates.

Most of the companies cited before the commission answered to the charges that

they had conformed to the order of the commission of March 23, 1889, providing that "imported traffic transported to any place in the United States from a port of entry or reception, whether in this country or in an adjacent foreign country, is required to be taken on the inland tariff governing other freights." But the following roads admitted that since the date of said order they had accepted as their share of the through rate on imported traffic a less sum than they had contemporaneously charged for like traffic originating in the United States: The Texas Pacific; St. Louis, Iron Mountain and Southern; Louisville, New Orleans and Texas; Illinois Central; Wabash; Southern Pacific, Union Pacific; Northern Pacific; Baltimore and Ohio; Lehigh Valley and Canadian Pacific railroad companies, and they presented various arguments in justification of their course, the substance of which was that the through rates from the foreign places of shipment were made by the ocean steamship companies, and that to secure their rightful proportion of the traffic it became necessary for them to accept as their portion the low inland rates.

The commission, in its decision, finds all of this contrary to law, and orders all the railroad companies named to "forthwith cease and desist from carrying any article of imported traffic shipped from any foreign port through any port of entry in the United States or through any port of entry adjacent to the United States, upon through bills of lading destined to any place within the United States, at any other than upon the inland tariff covering other freight from such port of entry to such place of destination or at any other than the same same rates established in such inland tariff for the carriage of other like kind of traffic, in the elements of bulk, weight, value and expense of carriage"—this order to take effect on and after May 5, 1891. The commission further order that "all the other defendants than those last above named must in the future comply with the rules and principles settled in this report and opinion in relation to the carriage of import traffic by carrying the same upon their inland tariff covering other like kinds of traffic in the elements of bulk, weight, value and expense of carriage." But the Grand Trunk Railway Company of Canada got around the object of the order of March 23, 1889, in a manner found by the commission to be perfectly within the letter of the law, although it does not prevent the company from carrying goods at the "cut rate." It enacted a "commodity tariff," which it published according to the regulations of the Interstate Commerce Commission, in which it included the chief items of transportation from foreign countries at rates much below the former schedule for the same class of goods. The company are enabled to do this because from their ports of entry—Montreal in the navigation season and Portland in the winter season—there is no exclusively local traffic of any consequence. In other words, all the goods of the character named which the road would be called upon to transport were foreign goods. Coming thus within the letter of the law, the commission was forced to hold the company justified and to dismiss the complaint. The peculiar position of this company under the circumstances will give them some advantage, though not a very important one, over the exclusively United States lines, but it is believed that legislation will be asked to remove even this advantage.

The Cincinnati Corrugating Company, long and prominently known as manufacturers of high grades of corrugated and other forms of iron and steel sheets for

roofing purposes, last year added a galvanizing plant complete. Their location being central gives them advantages for shipping. They carry a large and varied stock of their Piqua brand of galvanized sheets.

The Baring Failure.

At a "General Court" of the governor and company of the Bank of England, William Lidderdale, the governor, made the following reference to the Baring difficulties:

Before asking you to consider the accounts, I think that the special circumstances which have marked the past half year as an exceptional one in financial history call for some notice on my part. So much, however, has already been said and written upon the subject that I need not occupy you very long. You must all have learned from the press that in the second week of November it became known to the bank that the great house of Baring were in difficulties. For an announcement that the firm were embarrassed by their operations in South America the governors would, to some extent, have been prepared, but not for the actual facts. The situation was at once recognized to be very grave and to demand prompt and decided action on the part of the directors. We had a reserve ample for ordinary requirements, but not for the demand certain to come upon the bank the moment Messrs. Barings' difficulty became known.

The old and well-proved remedy of raising the rate would not have met the urgency of the case, as the condition of financial affairs in several countries of Europe, as well as in the United States, made it certain that gold to the required extent could not be attracted here except slowly, and then only by rates so high as to involve much suffering to our own trading and mercantile community. It was therefore decided to adopt exceptional measures, even at a considerable sacrifice to the bank. In the course of a couple of days we secured, by a sale of exchequer bonds to the State Bank of Russia, the sum of £1,500,000 in gold, and obtained from Paris, as a loan, by the prompt and liberal action of the Bank of France, a further sum of £3,000,000 as an addition to our resources. Four days of that week were occupied in the preparation and examination of a statement of Messrs. Barings' position, and on November 14 I was enabled to assure the heads of Her Majesty's Government that there was good reason to believe, without committing myself to definite figures, that the assets would yield a substantial surplus over the liabilities if sufficient time were allowed for liquidation. Without this belief in their full eventual solvency nothing could have been done to save the firm. When I tell you that the liabilities of Messrs. Baring Brothers were over £21,000,000 you will realize that the burden of carrying over their difficulties was not to be lightly undertaken even by the Bank of England, and that the risk of doing so was more than the bank was called upon to bear alone. It was necessary, therefore, to invoke the aid and support of the financial community in forming a guarantee fund to justify the bank in providing the money required.

I am glad to acknowledge the promptitude of the response made. It was nearly 5 o'clock in the afternoon on Friday when the guarantee list was opened and headed with £1,000,000 by the Bank of England. In half an hour the amount had reached £3,250,000, by 11 next morning—Saturday—it was £6,500,000, and at 12 I was able to announce that the liabilities of the firm would be duly met. This, however, did not prevent large further additions to

the guarantee fund, which eventually reached £17,250,000, rendering it certain that, even if the liquidation proved disappointing, the loss to any individual guarantor could hardly be serious. You will, no doubt, wish to know how the liquidation has proceeded, and I will, therefore, give an outline of the account. On November 1 the liabilities stood at about £21,000,000, the assets apparently at about £24,800,000. Since then numerous entries have been made on both sides of the account, additional drafts having come forward and remittances been received, but on March 1 the liabilities to the public had been reduced to £3,522,000. The debt to the bank, however, had reached £6,650,000, making a total of £10,172,000 still due. The assets in bills and cash were on March 1 £849,000, and the debts due to the firm £3,364,000, making a total of £4,213,000. To cover the difference of nearly £6,000,000 there were securities in hand to a considerably larger extent. Of these the partners' lands, houses and private property represent over £1,000,000, and the securities of which the value is readily ascertainable about £1,250,000; the balance consists of South American securities, and these are much more difficult to estimate. Wherever there are quotations we have taken the very lowest; in other cases we have put on low prices, and I can only say again, without committing myself to figures, that, although the market for South American securities has seriously declined since November 1, there is still, to all appearances, a substantial surplus over the liabilities—a surplus, in my judgment, quite sufficient to protect the guarantors.

Customs Decisions.

The Treasury Department has made a ruling in regard to the marking, stamping, branding or labeling of foreign goods, under the terms of the present Tariff law, to the effect that articles which were ordinarily stamped at the time of the passage of the act, must now be stamped with the name of the country of origin; if ordinarily branded, the name of the country must be branded, or if labeled the name of the country, and if marked in any other way, the name of the country should be now marked in the same manner, but that goods which were ordinarily stamped at the time of the passage of said act cannot now be labeled except where the goods had been manufactured prior to the passage of the act and the stamping and branding or otherwise marking is impracticable from the nature of the goods. The decision arose on an application for the entry of Carving Knives labeled with the name of the country of origin.

The Treasury Department at Washington has affirmed the decision of the Collector of Customs at Philadelphia, assessing duty at the rate of 45 per cent. ad valorem as unenumerated manufactures of metal on certain so-called Chopping Knives which the importer claimed to be dutiable at the rate of 35 per cent. ad valorem under the provision for Cutlery. This action is based on information that the articles in question are in design and use more closely allied to Cleavers than to Knives, and that their adaptation to use as Choppers in contra-distinction contributes the principal feature of their construction.

Southern people, with something like exultation, notice the extraordinary preponderance of cotton exports this season compared with any other single article of merchandise. For February the total is about one third larger than for the corresponding month in 1890. The South, commercially speaking, is just now "at the front."

Seamless and Brazed Brass and Copper Tubes.

[With Supplementary Sheet of Engravings.]

The magnitude and importance of the seamless brass and copper tube business at the present time and the almost total lack

patents, about the year 1850. At that date the business in Europe was very small, and the product turned out was decidedly crude. The principal uses to which the tubes were then put were for flues in locomotive boilers and condensers, which work did not require extreme accuracy or uniformity in sizes and gauges. By the perseverance and zeal on the part of the owners, who managed the business themselves, the American Tube Works

\$300,000, and securing the master mechanician or superintendent of the American Tube Works, they erected buildings and put in machinery for the prosecution of the business at Mott Haven, N. Y. They spent the whole \$300,000, and for want of more money work was suspended, the plant not having as yet been completed. Another party of capitalists took the matter up at this stage, raised another \$300,000, all of which was spent in the effort



Fig. 2.—Map of Works of Randolph & Clowes.

of literature upon the subject justify us in first presenting a brief historical account of the industry and the present stand it takes, before describing the methods pursued at one of the most extensive works.

THE HISTORY OF

The seamless brass and copper tube business was first commenced in the United States by the American Tube Works of Boston, working under English

have gradually grown to considerable importance, and until about 1870 were really the only manufacturers in this country of seamless tubes. This practical monopoly of the business permitted them to obtain very high prices. As a natural result would-be competitors started up rival concerns, and about 1855 the North American Seamless Tube Works were organized by New York parties with a capital of

to get the business into practical operation. Work was then abandoned and the machinery sold for old iron, but not, however, until a third party of capitalists had tried to run the plant under the name of the Columbia Tube Works. The Bridgewater Iron Works, which had been very successful in the iron business and amassed a large surplus, and who considered the seamless tube business to be one yielding

enormous profits, erected a plant for making seamless brass and copper tubing some time in the '60s. They erected buildings, put in a full plant, and although they succeeded in making tubes and bringing the prices down to such a point that there was little or no profit in the business, they were not successful, as in July, 1886, they went into bankruptcy. Other aspirants for honors and profits loomed up about the year 1880.

At that time Brown & Bros. of Waterbury, Conn., probably stood as high in the manufacture of sheet brass and copper, brazed tubes, &c., as any concern in the country. About 1878 they also turned their attention to the seamless tube business, being probably led into this from the fact that they had started to manufacture copper range boilers drawn from sheet copper. The heavy hydraulic machinery which this process necessitated led them to believe that they could extend the business to turning out seamless brass and copper tubes with machinery founded on the same principle. This single hydraulic

were the American Tube Works, of Boston, the Bridgewater Iron Works, Brown & Bros. and the Benedict & Burnham Mfg. Company. Since 1886 there have been at least two other attempts to start a seamless tube business in this country, one in Philadelphia and one in Waterbury, both of which have been as yet unsuccessful. Upon the failure of Brown & Bros. the seamless and brazed tubing and boiler works were purchased by Randolph & Clowes, the former putting in most of the capital but taking no active management in the business, which devolved upon the latter, George H. Clowes, who had been for some 10 or 12 years connected with the old firm in various positions, and during the last four or five years of its existence acted as assistant treasurer and office manager, but who had had nothing to do with the management or policy of the company, his duties being simply to see that the details of the business were carried out in accordance with the policy of the directors. The last years of the existence of Brown & Bros. had been devoted al-

keepers in the general offices at Waterbury, eight under superintendents or foremen, one for each of the following departments: Seamless tube, brazed tube, boiler, kettle, brass rolling mill, copper rolling mill, casting department and machine and tool department. There are also depots in Chicago, Boston and New York.

The Works.

Before entering upon a detailed description of the method of making seamless and brazed brass and copper tubes, it would perhaps be interesting to briefly note the principal features of the establishment of Randolph & Clowes, the accompanying map, Fig. 2, giving a good idea of the general arrangement. At the gate is the office building, Fig. 3, of which we present a drawing of the first floor. This is divided into a main or general office, bookkeepers' room, receiving clerk and time keeper's room, this being so arranged as to overlook the entrance gateway, and so as to make convenient the checking of all goods received

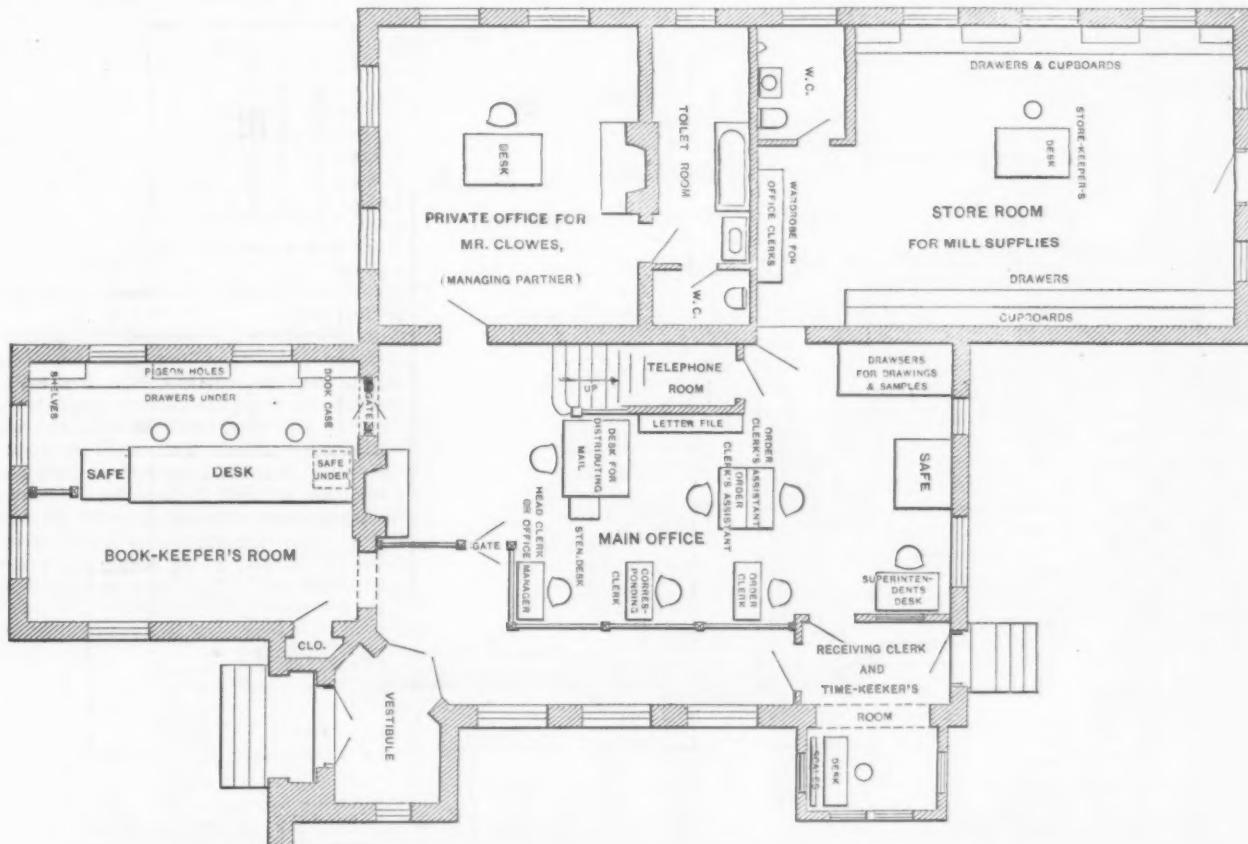


Fig. 3.—Plan of Office of Randolph & Clowes.

bench for drawing up boilers with its dies and mandrels cost fully \$40,000, but was found unsuitable for the making of tubes of all sizes, especially those under 8 inches. The consequence was that from a small beginning one bench after another had to be added until at the time of their assignment they had a large number not only of hydraulic benches, but also a great number of chain benches. Subsequent events showed that this plant, although not evenly balanced at the time of the failure of Brown & Bros., was in excellent condition to be made perfect by the addition of intermediate benches and other machinery.

Brown & Bros. made an assignment in January, 1886. About the time they started in the seamless tube business the Benedict & Burnham Mfg. Company, also of Waterbury, turned their attention in the same direction. Two other companies in Connecticut a short time later also began the manufacture of tubes. However, for several years after 1878 the only manufacturing concerns in the business

most exclusively to the seamless tube business and to perfecting machinery for the same and the house boiler works. As consequence the rolling mill and other parts of the business were neglected.

Under the direction of Mr. Clowes and as a result of his energy and executive ability the business grew rapidly until in March, 1889, it had outgrown the quarters then occupied by the seamless and brazed tube and boiler works, and the adjoining property, consisting of 6 acres of land with rolling mills, machine shops, &c., was purchased. This required, to a certain extent, the overhauling or rearrangement of a large part of the plant and the addition of much new machinery. They have put two new and large engines in place, one for the copper and rod mill and the other for the brass mill; have added new rolling machinery and have altered and put in thorough condition all the old buildings. The present firm commenced business with 50 men and one clerk, and now employ upward of 400 men, about a dozen clerks and book-

and all goods leaving the works, except, of course, those loaded upon cars. Opposite the main entrance is the managing-partner's private office. The front entrance is through a vestibule, passing directly into the main office, which is 24 x 40 feet, and is divided by a low railing into a lobby for the public and the office part of the room. Next to the entrance is placed the chief clerk's desk, with stenographer and correspondence clerks close at hand. The order and office clerks' desks are placed near the rear entrance to be convenient for the foremen, who enter that part of the building from the mill. Partitioned off from the main office is the receiving clerk's and time keeper's room, which contains the weighing beam and fixtures for operating the main gates, and with windows commanding both the office entrance and the mill. The bookkeepers' room is divided by a long, high desk into a public lobby and a working space for clerks. In the rear of the building is the room devoted to mill supplies and containing the storekeeper's desk. The building is

heated by steam and lighted by both gas and electricity.

Entering the mill at the right of the main entrance, we find the shipping room, in which are appropriate scales and testing machines and adjoining which are the engine, boiler and pump rooms for the seamless tube plant. In the same series of buildings are placed the hydraulic presses for drawing tubes and boilers, also a tool room, and above which are the rooms for putting together the patented seamless range or copper house boilers. Next adjoining are the pickling and core

is 20 feet in diameter and weighs 40,000 pounds. The crank shaft is of the best hammered iron, 13 inches at the journals, and enlarged to 15 inches. The engine is condensing, is of the Corliss type and embodies all the improvements made by this company. It drives five sheet-metal rolls, as follows: 24 x 60, 12 x 20 (two pairs), 36 x 20 and 42 x 20 inches. There will soon be added two pairs of 30 x 16 inches. On the crank shaft is a gear 10 feet in diameter, 16 inches face and 5-inch pitch, which engages with a gear 13 $\frac{1}{2}$ feet in diameter mounted on a 12-inch wrought-

brazed tube department, three stories high, and the carpenter and box shop, are at the rear of the grounds.

Drawing Seamless Tubes.

The drawing of seamless brass and copper tubes is a business very small in comparison to other branches of the brass and copper trade. It is extremely technical, requires intricate detail and the employment of massive and costly machinery, and is expensive for the simple reason that the output is reduced, owing to the loss found at several stages in the manufacture. The tube is first cast, and it may be said that on this initial process the whole success of not only the final product, but of the work, depends, as far as the financial feature is concerned. That this is so will be evident when we state that before it can be found out whether a casting is without flaw or not it must pass through several operations in the shape of drawing, each one of which requires annealing and pickling. It is, therefore, apparent that a flaw in the casting may not be made evident until almost all work has been done on that casting to bring it to the shape required. In addition to this the details of keeping the machinery necessary for the work in shape must be done on the premises, as it is frequently the case in drawing tubes that the die has to be overhauled and shrunk after having been used in drawing only two or three tubes at a time. This, together with the first cost of this part of the plant and the unusual wear and tear, make the process, taken as a whole, one requiring great care and one in which it is extremely easy to spend much money without producing a perfect tube.

In describing the method of making a seamless brass tube, we shall first commence with the casting, and then follow the tube through the various stages. We shall do the same with boilers, and also with brazed tubes. The mold for casting the brass tube is mounted to swing on trunnions, so that it resembles a cannon having an equal external diameter throughout its whole length. This is placed in a vertical position, a cap being fitted over the lower end. The core is then intro-

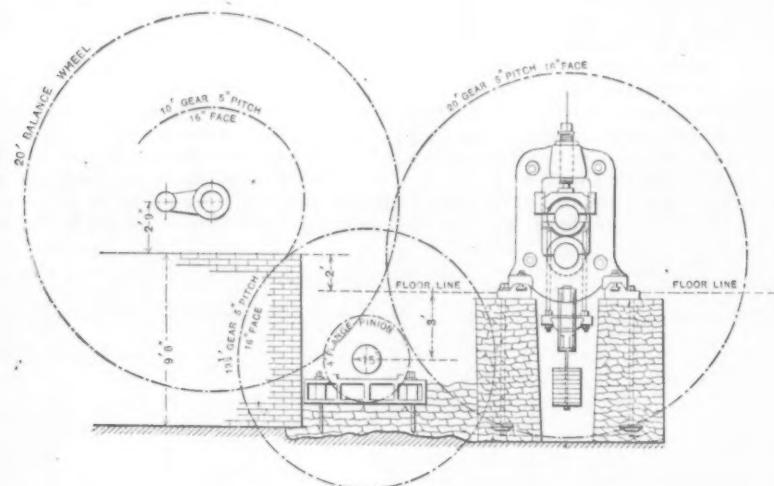


Fig. 4.—Elevation, Showing Transmitting Gearing.

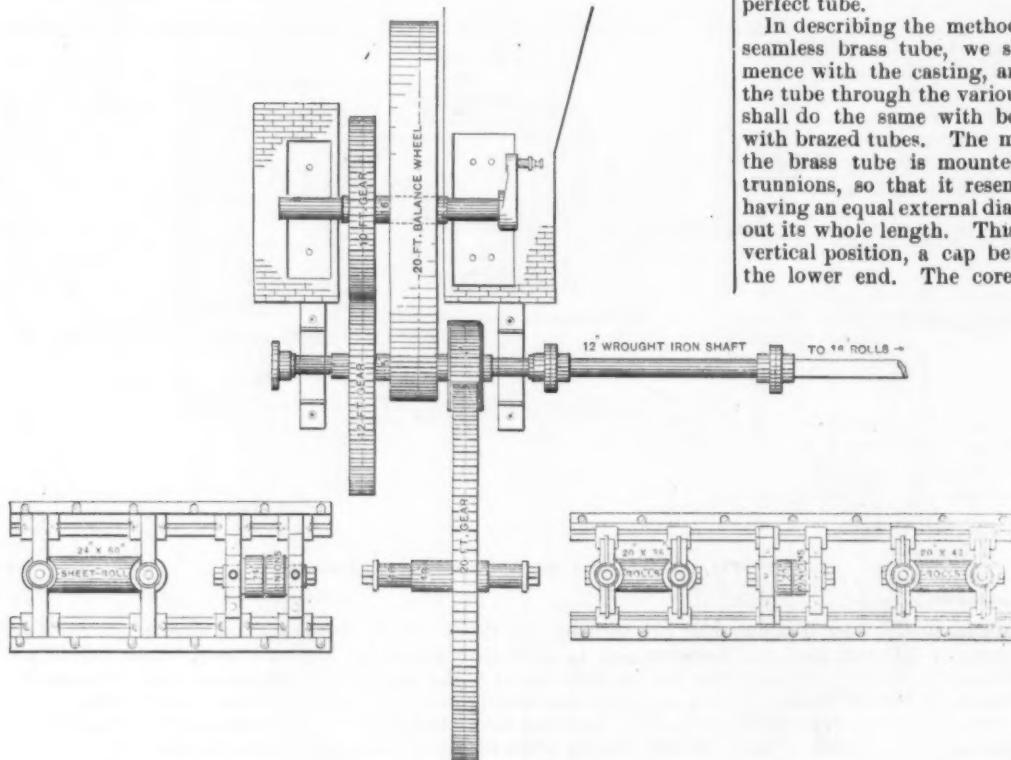


Fig. 5.—Plan, Showing Arrangement of Engine, Gearing and Rolls.

rooms, beyond which are the flat metal casting and tube casting shops. Directly back of the office and to the right is the main rolling mill, for sheet copper, brass, &c., together with machine, blacksmith and tinning shops. In the main rolling mill buildings are located the Watts-Campbell engines recently put in for operating the trains of rolls for both the brass and copper mills, consisting of 12, 16, 20 and 24 inch trains, a general view of which is presented in the large drawing on the accompanying inset sheet.

The cylinder of the engine shown in the engraving is 26 x 60 inches; the fly wheel

iron shaft which drives the first system of rolls. On this shaft is a 4-foot flanged pinion engaging with a 20-foot gear on the shaft driving the second system of rolls. It will be seen from the accompanying drawings, Figs. 4 to 8, that the first shaft is placed below the floor line, the other being above.

Next to the sheet mill we find a machine shop and press room for pits and bottoms, brass kettle machines, tinning room, steam fitting and pipe room, and a contemplated rod rolling mill, with 9 and 16 inch trains, these to be driven by the 24 x 56 inch engine in the rolling mill. The

duced and the metal poured. As soon as cool enough the cast tube is removed, the mold is swung to a horizontal position, swabbed out, coated with black lead, and again swung to a vertical position to receive the core and another casting. Many things here govern the condition of the casting as finally received. In the first place, the metal must be of just the right composition, and this, of course, is a part of the trade, and may be considered as a trade secret. Next, the manipulation of the mold and the composition of the material with which its interior is coated, and next the method of manufacture and

composition of the core. These are all more or less chemical in their nature, but all of them being perfect, it now becomes necessary to absolutely center the core, since the least variation to either side of the mold would result in an imperfection which might not be seen in the cast tube, but which would be divulged as the drawing progressed, and which would certainly make itself known during the final stages toward the completion of the tube.

The cast tube is then thoroughly cleaned

in a frame, and as they govern the exterior size of the tube, they must be changed with each pass.

Brazed Tubes.

The first step in the making of brazed brass and copper tubes is to cut the sheet metal into strips of a width equal to the circumference of the desired tube. This strip is then drawn through a former which brings it to the shape of an open-sided tube. It is then tied with wire at

rolls which are cut to form male and female dies, corresponding to the pattern it is desired to press into the metal. In drawing the tube through the dies a chain bench is employed. This consists of a long frame—as long as the tube to be drawn—shaped very much like a lathe bed much extended. At one end is a frame carrying the dies and at the other is a driving gear which communicates motion to a square-linked chain moving constantly along the bed. The mandrel,

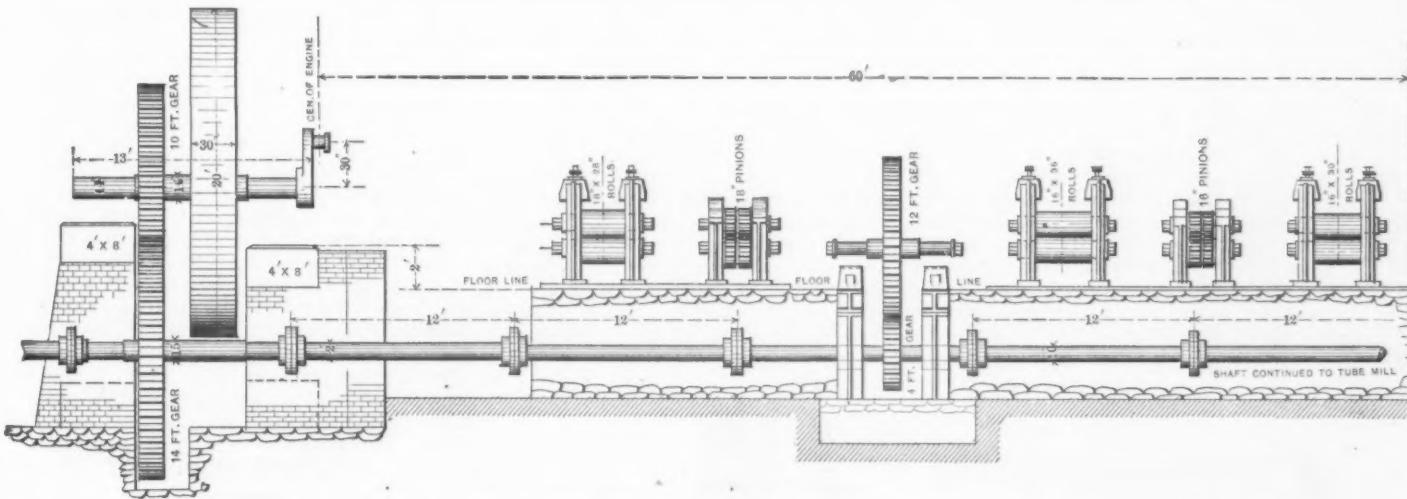
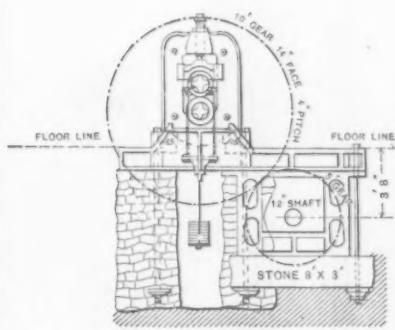


Fig. 6.—Elevation Parallel with Crank Shaft.

and passes to the drawing room. In general there are here two methods of drawing a tube, one in which the tube is placed over a mandrel solid throughout the entire length of the tube, and which, together with the tube it carries, is then passed through the dies. The next is a shorter mandrel, which may be considered as only conforming to the interior of the tube at the dies. In the first method the tube is placed on the mandrel, which, together with the tube, is then pulled through the dies by means of hydraulic cylinders, power being supplied to these from an accumulator operated in the pump room. After the tube has passed through the dies it is loosened from the mandrels by being

Fig. 7.—End View of 16 and 18 inch Rolls.



having been placed in the tube, the end of the latter is grasped by tongs, which are then hooked into one of the links of the chain. The tube is thus drawn through the die. The mandrel serves to maintain the shape of the tube. In making some patterns, like spiral, or single and twisted rope, Fig. 10, the blank tube is fed through a machine much resembling the headstock of a lathe. The jaws of the chuck are provided with wheels set at an angle to the axis of the tube corresponding to the pitch of the spiral desired. The chuck being revolved, the tube is forced through by the action of the inclined wheels. Modifications of these two methods and the employment of suitable dies

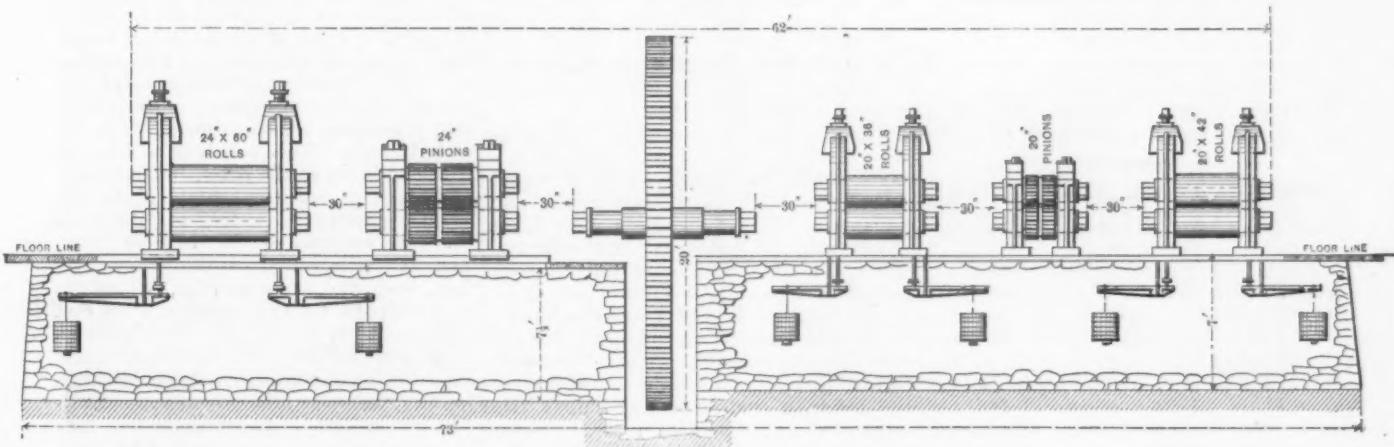


Fig. 8.—Elevation of Fig. 5.

struck along one line by a hammer, this slightly expanding the metal so that it is free to leave the mandrel.

In the second method the mandrel is held by a rod at the die, the tube being drawn down over the mandrel and within the die. After each drawing the tubes are pickled and then annealed, when they are again drawn, this process being repeated until the desired size has been reached. The dies are circular rings held

every few inches to bring and hold the meeting edges together until the tube has been passed through a furnace and the seam brazed. It is then drawn as may be necessary and is ready to receive any designs, which give it the name of

Fancy and Extra Fancy Tubes.

In making tubes having embossed patterns for chandelier work and work of a similar kind, the strip is passed through

produce the many and seemingly intricate patterns so well known. The engravings, Figs. 9 to 11, show some of the patterns made. All operations connected with the making of fancy tubes are performed rapidly, and after the first expense of providing the regular dies and presses, cannot be considered as being costly.

Making Range Boilers.

The Brown's patent sea mless drawn copper house boiler for ranges is made

in two pieces, each of which is in the shape of a cup. To make one-half of a boiler the rolled sheet of copper is about $\frac{1}{4}$ inch thick and from 24 to 36 inches in diameter. This disk is placed in front of a ring or die and by a plunger operated by a very powerful hydraulic cylinder is forced through the die. The die is but a little smaller in diameter than the plate, so that the latter resembles after its first passage a wide but very shallow pan. This pan is then annealed and pickled and forced through a second die of smaller diameter. These operations are repeated until the diameter of the boiler has been reached. This process does not change the thickness of the head, the drawing being confined solely to the side.

The meeting edges of the two shells are then shaped as shown in Fig. 12, a band covering the joint is put on and then the two parts are forced together. Before being united a strip of solder is laid in the V-shaped ring formed by the edge of the inner half of the boiler. The boiler is then placed in a circular blowpipe and the seam heated until the solder oozes through all around. Before being brought together there is a V-shaped spiral sprung into each

60 feet in all and a millwright shop 100 x 50 feet. The last-named building is two stories high while the others are one-story structures. A new steam hammer shop has just been completed, which is 200 x 80 feet, with a wing 60 x 40 feet.

These works, it is claimed, have the largest foundry capacity of any in the country. They are supplied with eight cupolas in all, each capable of melting 40 tons of iron per day, single turn. Their usual daily work is 300 tons. Including the Chicago and St. Louis foundries, the Bass establishments melt over 500 tons of iron per day. If this foundry capacity is exceeded by that of any other concern we are not aware of it. There are four cupolas in the Fort Wayne car wheel foundry, arranged in pairs on one side of the building. From these cupolas the molten iron is conveyed in ladles on buggies to the different floors. A separate crane serves each floor. The ladle is taken from the buggy by the crane and the contents poured into the molds, which are arranged in a circle. As soon as the metal has set, which is usually in about five minutes, the flasks are knocked off and the wheels taken to the annealing pits. These num-

ber about 130. Each holds 20 wheels. The wheels remain in the pits about a week and slowly cool.

weather. The north side has a large number of windows, running nearly to the top of the building, giving an abundance of light and ventilation. The equipment comprises two 4-ton hammers, one 2-ton hammer, one axle hammer, ten forge fires, three heating furnaces and two scrap shears. The works build their own steam hammers and shears. One of the shears will cut axles easily and is a very ponderous machine, weighing upward of 50 tons. Five steel boilers supply steam for the forge, including an engine for general power.

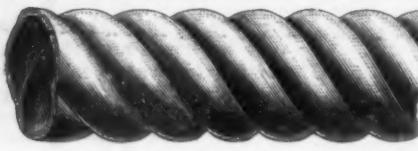
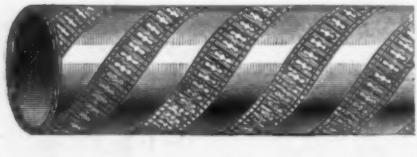
The blast arrangements for the forge fires are worthy of special mention. The fan, which is of their own construction, built of the Sturtevant type, is placed in a covered box below the level of the floor, and the blast is conveyed by overhead pipes to the fires. The pipes are thus completely exposed, so that they can be easily reached in case of accident. Six of the fires are equipped with cranes, and there are five other cranes to serve the furnaces and hammers. The addition of a 7-ton hammer is contemplated, and space has been left for it. The building is well sewer, the site of the structure having been filled above the surrounding level for that special purpose. Part of the equipment is now ready to be started, and the whole will soon be in active operation on locomotive and shot forgings, car axles and general shaped work.

The Soo Canal.

One of the largest, most complete and most beneficial efforts in practical hydraulic engineering ever undertaken was the construction of the great canal which links Lake Huron to Lake Superior at Sault Ste. Marie, Mich. It makes navigation possible between the great lake of the series and its sister lakes further south. Were it not for this artificial water connection there would be no navigable outlet from the great Lake Superior region, and consequently some of the large mining districts, including the Calumet and Hecla copper districts, the Gogebic, Marquette, and Menominee iron sections, and, last of all, the Duluth wheat shipments, would be most effectually excluded from lake traffic to all parts of the lower lakes.

The growth of commerce on the Northern lakes has been so rapid that a second enlargement of the canal locks is now in progress, a capacity of about 100 vessels per day proving inadequate. The parallel canal or lock now approaching completion will have double the capacity of the present one, permitting vessels drawing 19 feet to pass through. This new lock will be 800 feet long between the gates, 100 feet wide, 44 feet deep, and will contain about 23,338,000 gallons of water, or about six times the capacity of the canal of 1852. The new cells will fill as the present cell does, from the canal of 1870, which has been widened for the purpose. The cost will amount to \$5,000,000. This commercially great but little known strip of water has been the direct cause of the railroads losing freight amounting to more than 20,000,000 bushels of wheat, 5,000,000 tons of coal, iron ore and copper, and many thousands of tons of Northern products during the last few years. It is easily to be surmised that when the gigantic work is completed, which will be in about two years, the railroads will suffer from keener competition in proportion with the increased draft and capacity of the canal.

The wire nail factory of Carnegie, Phipps & Co., Limited, located at Beaver Falls, Pa., produced during the second week of this month for five turns of 21½ hours each 10,171 kegs nails, an average of 2034 kegs per turn.



Figs. 9 and 10.—Fancy Brass Tubes.



Fig. 11.—Extra Fancy Brass Tube.



Fig. 12.—House Boiler.

to prevent collapsing. The interior is then thoroughly cleaned and tinned. The boilers are provided with the usual pipe openings and tested under water pressure.

The Bass Foundry and Machine Works.

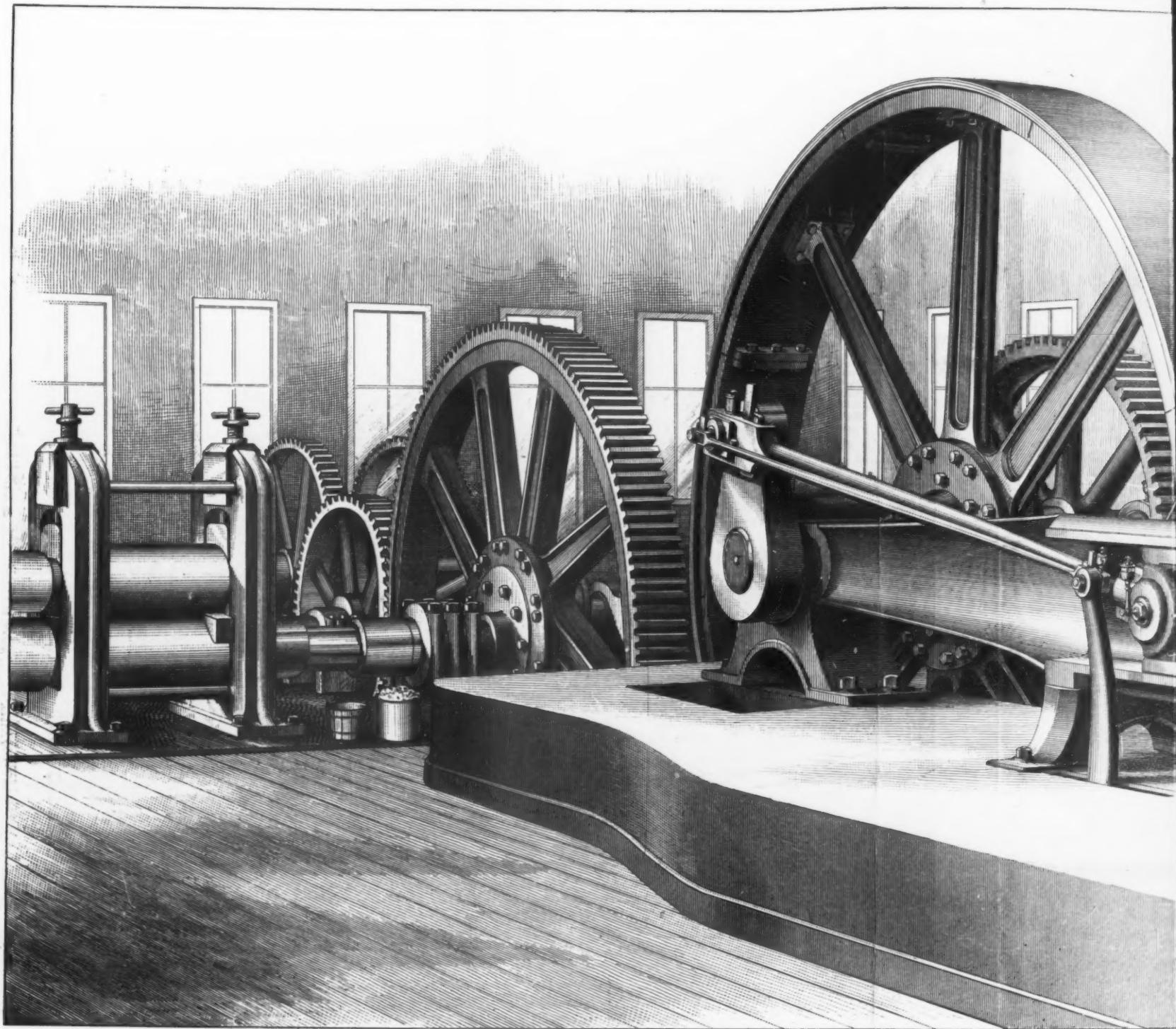
The most important industrial establishment at Fort Wayne, Ind., is the Bass Foundry and Machine Works, founded nearly 40 years since by John H. Bass, and of which he still continues to be the active head. This establishment makes a specialty of railroad work and has grown with the development of railroad interests, until it now covers a tract of about 18 acres in the heart of the city of Fort Wayne. It is located near the tracks of the Pennsylvania and Wabash railroads. Mr. Bass also maintains closely related works at Chicago and St. Louis and owns a charcoal blast furnace in Alabama, whence he draws a large part of his supply of pig iron for the manufacture of car wheels. The Fort Wayne works employ from 1000 to 1200 men and are now running full time in every department. There are two jobbing foundries, each 400 feet long by 75 feet wide, a car wheel foundry 500 x 75 feet, a machine shop 230 x 70 feet, an L-shaped boiler shop 290 x

ber about 130. Each holds 20 wheels. The wheels remain in the pits about a week and slowly cool.

The machine shop is fitted with large tools for heavy work. Among them is a boring mill which will take in a 16-foot wheel with a face of 8 feet 6 inches, and a planer which will handle a piece 8 feet square and 19 feet long. A special machine of original design has recently been built in this shop, and is now a part of its equipment, which will bore cylinders up to 6 feet in diameter and 22 feet in length. Attention is now being given to the manufacture of rolling mill engines. At present the machine shop is engaged upon two large extra heavy engines to supply power for a new addition to the mill of the W. Dewees Wood Company at McKeesport, Pa. The engines in the rolling mill of the National Forge and Iron Company at East Chicago, Indiana, were built here. This machine shop also enjoys a very steady run of jobbing work.

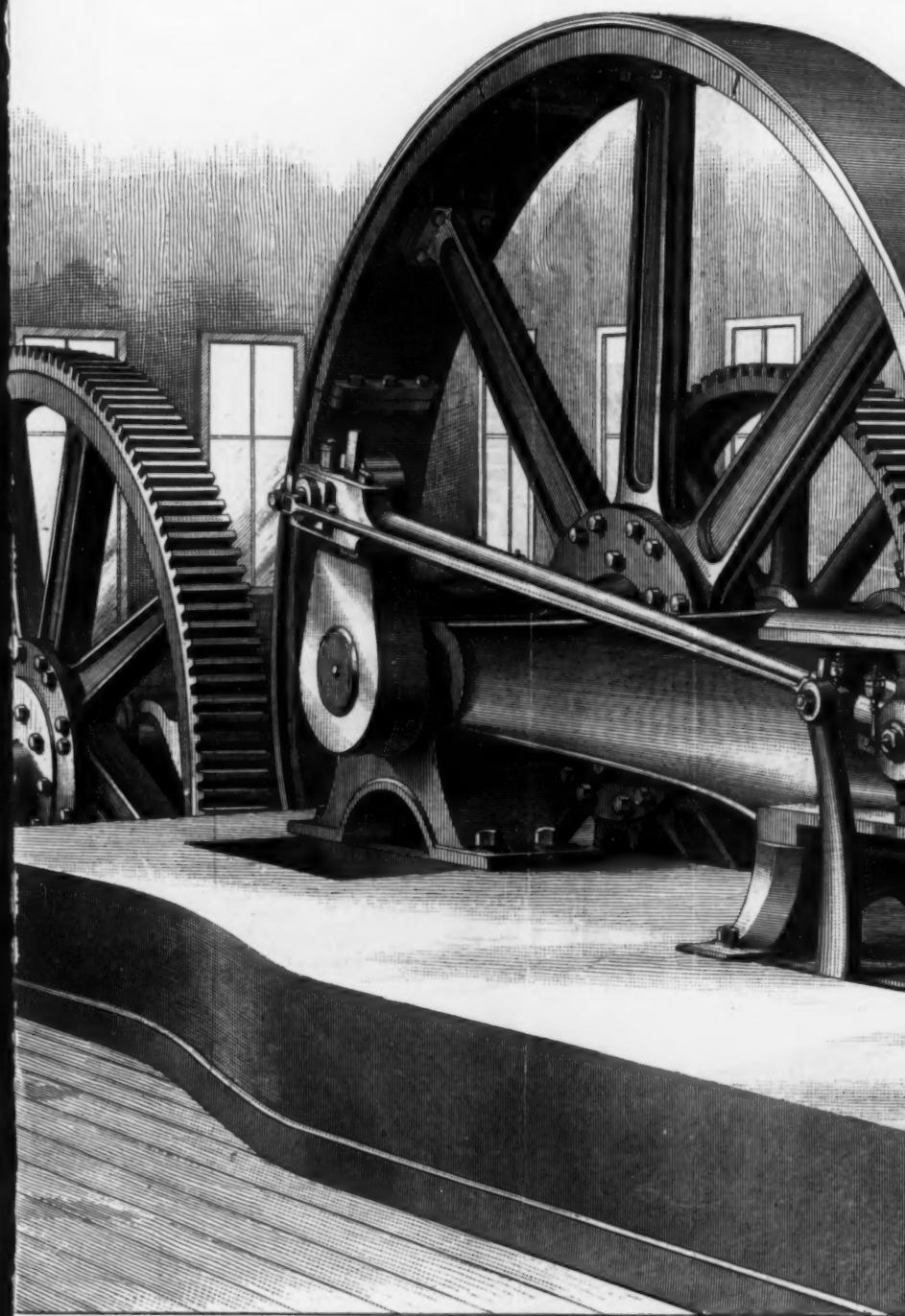
The new hammer shop or forge is an admirably planned structure. It is built of frame, with a truss roof, so that no posts interfere with the handling of material. The sides are covered with corrugated iron, and the roof is of slate. The whole of the south side is fitted with glass doors, so that the entire building can be thrown open on that side in warm

Supplement to The Iron Age, April 2, 1891, Volume XLVII, No. 14.

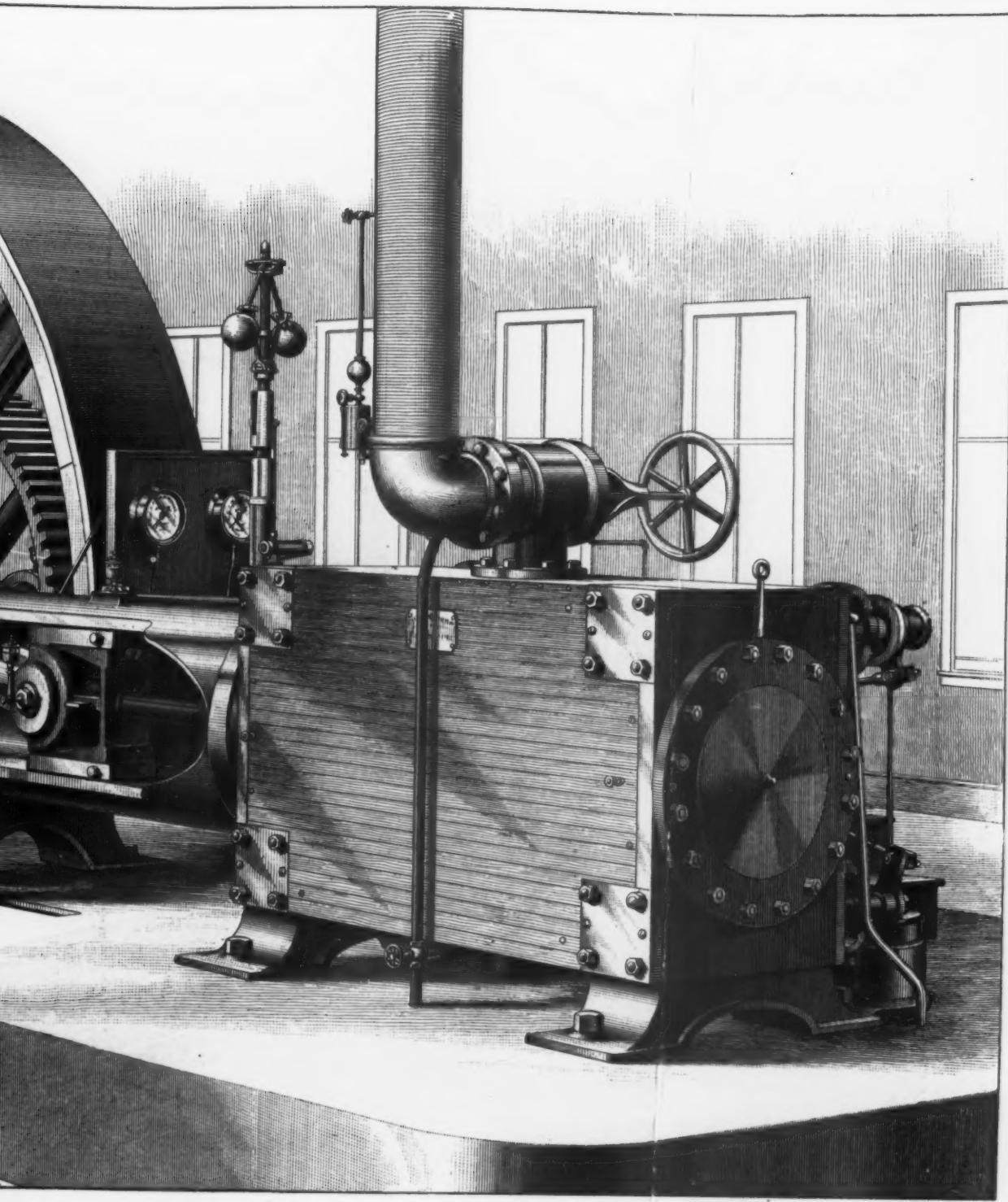


THE WATTS-CAMPBELL ENGINE IN THE SHEET MILL

XLVII, No. 14.



TS-CAMPBELL ENGINE IN THE SHEET MIL



MILL OF RANDOLPH & CLOWES.

Aluminum in Railroad Work.

Although it was specially addressed to railroad men before the New York Railroad Club, the paper recently read by Alfred E. Hunt of the Pittsburgh Reduction Company contains a good deal of information general in interest. We may note in this connection that the concern just named has lately produced aluminum 99.98 per cent. pure, and is making in considerable quantity aluminum 99.60 fine.

The properties of aluminum which will probably give it the greatest availability for use in railroad work are:

1. Its relative lightness, the specific gravity of aluminum being about 2.6. The weight of a given bulk of aluminum being 1, iron is 2.9 times heavier; steel, 3 times heavier; copper, 3.6 times heavier; nickel, 3.5 times heavier; silver, 4 times heavier; lead, 4.8 times heavier, and gold, 7.7 times heavier. Most woods that would be used for structural purposes are about one-third as heavy as aluminum.

2. Its non-tarnishing quality, as compared with other metals used in railroad work, aluminum not being acted upon by sulphur fumes at all, and being very much more slowly oxidized by moist atmospheres than most of the metals.

3. Its extreme malleability.

4. Its easy casting qualities.

5. The influence of the metal in various alloys will give it advantages, some of which I will try to enumerate and call to your attention.

6. Its high tensile strength and elasticity when weight for weight of the metal is compared with other metals, and especially when alloyed with a small percentage of titanium, silver or copper and properly worked by being rolled or hammered or otherwise drawn down.

7. Its high specific heat and electrical and heat conductivity.

Unfortunately aluminum is not, section for section, as has been widely claimed for it, comparatively a very strong metal. It is only about as strong under tensile strain, section for section, as cast iron, and has less than one-half the strength of wrought iron, under ordinary conditions. Under compression the metal, unfortunately, has a very low elastic limit, although its extreme ductility allows the metal to flow upon itself so freely as to make it for some special purposes a very safe metal to use in compression. I show a series of cylinders of $1\frac{1}{2}$ inches diameter which have each had a compressive strain of 200,000 pounds applied to them, together with the result of a compression strain of 180,000 pounds upon similar cylinders of cast iron.

The same remark applies to transverse tests on aluminum. It is not a rigid metal at all, and bends under transverse strains very readily. I append a table of results which, from our experience, I believe will show about the average tensile and compressive tests of commercially pure aluminum:

	Pounds.
Elastic limit per square inch in tension (castings).....	6,500
Elastic limit per square inch in tension (sheet).....	12,000
Elastic limit per square inch in tension (wire).....	16,000-30,000
Elastic limit per square inch in tension (bars).....	14,000
Ultimate strength per square inch in tension (castings).....	15,000
Ultimate strength per square inch in tension (sheet).....	24,000
Ultimate strength per square inch in tension (wire).....	30,000-65,000
Ultimate strength per square inch in tension (bars).....	28,000
Percentage of reduction of area in tension (castings).....	15 per cent.
Percentage of reduction of area in tension (sheet).....	35 per cent.
Percentage of reduction of area in tension (wire).....	60 per cent.

Percentage of reduction of area in tension (bars).....	40 per cent.
Elastic limit per square inch under compression in cylinders, with length twice the diameter.....	3,500
Ultimate strength per square inch under compression in cylinders, with length twice the diameter.....	12,000
The modulus of elasticity of cast aluminum is about.....	11,000,000

It will be noted that the tensile strength of aluminum wire runs up very considerably over that of the rolled metal. This is due to the peculiar property of aluminum to harden under work. The metal requires frequent annealing in rolling; and if it is to be drawn down in wire with as little annealing as possible, the tensile strength is increased very considerably. This property of the metal is increased especially if the aluminum is alloyed with a small percentage of copper, titanium or silver.

It will be perfectly feasible to produce a wire of aluminum alloyed with a few per cent. of silver, titanium or copper which will have a tensile strength of 80,000 pounds to the square inch, and which will have, weight for weight with copper wire, an electrical conductivity of 170 to that of copper being 100. When it is taken into consideration that the copper will only have a tensile strength at maximum of, say, 30 pounds per square inch, against the 80,000 pounds strength of the aluminum-titanium alloy, and when the further fact that iron or soft steel wire has only a conductivity of 17 in the same scale, and has a less or at most only an equal tensile strength per inch with the aluminum-titanium alloy, a wide field for usefulness for electrical conductors seems opened for the metal, even at present, when the price of the wire of aluminum-titanium alloy will necessarily be considerably higher; but when such an alloy can be produced in fine wire at a price ten times that of the iron wire, pound for pound, then as the section can be reduced the aluminum-titanium alloy will be the cheapest, as well as the most advantageous, for electrical conductors.

To return to the properties of the metal taken in the order as I gave them of their adaptability for use in railroad work:

First, as to lightness, I will cite the use of aluminum for the purpose of valves, where lightness will be of value as decreasing the inertia or the momentum of the mass of the valve (and I can tell you that aluminum slide valves are now under trial, I understand, with very satisfactory results), to control the passage of the air from the storage cylinders to the brake cylinders in the new and larger form of the Westinghouse air brake now under construction, they having reached the point where the inertia to be overcome of the heavy iron or brass slide valves is a very serious consideration. This inertia is decreased one third by the use of aluminum, the question of wear being now the only one to be decided about, and if the castings already in use are proved to wear too rapidly, I feel confident that the addition of a little copper to the metal and casting the valves nearly to size and drop forging them to finished shape, in order to further harden them, will produce a metal that will be entirely satisfactory, and, indeed, so far as we have heard, the valves of the pure metal in sample castings seem to be wearing very well.

Wherever momentum has to be overcome, as in the reciprocal parts of many forms of machinery, aluminum can be advantageously used. A use of the metal, due to its lightness, which may be of more or less interest to railroad men, is in windmills, where the metal has already been proved advantageous in both the fan blades and the frames.

Considerable work has been done in the way of using thin sheets, rods and tubes of steel for passenger coaches, which, with

suitable non-telescoping devices, bids fair to be a very safe car, preventing serious accidents in collisions. The use of the lighter metal, aluminum, for the same purpose may become a feature of the future; and here the remarkable capacity of the metal to flow on itself, and to upset or bend under sudden impact rather than to fracture, as cast iron or even steel does, would add additional safety to the use of aluminum for such a purpose. As sheets of aluminum can be used for car coverings, having less than one-third the thickness necessary for wood used under similar circumstances, the weight of the car, instead of being materially increased, as with the steel cars, would be somewhat reduced from that of wooden covering now in general use; and here the freedom from serious corrosion from moist atmosphere and from sulphur fumes would be of special advantage.

In the semaphore signals, disks and their moving frame work, aluminum has already made an opening that bids fair to be largely increased, and we expect that the day is not far distant when the switch and signal companies will be among the large consumers of the metal.

Aluminum does not seriously corrode so as to interfere at all with the strength of thin sections of the metal, as does iron or steel; the thin film of oxide which covers the surfaces of the metal which have been long exposed to moist atmosphere seems to prevent its being further acted upon. But it does give a surface tarnish to the metal which cannot be rubbed off with the usual metal polishing compounds, without interfering with the surface of the soft metal. This can be removed by rubbing with a flannel rag which has been immersed in a 2 per cent. solution of hydrofluoric acid and then again rubbing up the polish with a rag saturated with carbon oil.

When properly cared for polished surfaces can thus be kept bright for a remarkably long time; but, owing to lack of knowledge of the way to keep the surfaces of the metal brightly polished, attempts that have been made so far to use aluminum for the reflector sheets of locomotive headlights have proved failures. But with the better knowledge that we have to-day of the easy possibility of retaining the surface polish of the metal, the subject we expect to have taken up again, with, we hope, better results.

For badges and buttons aluminum has already achieved a position, and I presume it is likely that many of the uniformed officials of the railroads represented by you gentlemen have aluminum coat buttons and perhaps hat badges.

Art work in metals has already reached a high state of development in the interior decorations of passenger coaches of the better grade. Owing to its extreme malleability and easy casting qualities, aluminum is doubly destined to play a very conspicuous part in such work, as the metal is certainly susceptible of being worked up and finished in very beautiful and ornamental designs, with changes in color and luster, due to different ways of treating, that certainly will give pleasing effects. In the hardware of the interior of cars, as well as in most other grades of builders' hardware, aluminum bids fair certainly to have large use.

Much has been said of the prospects of aluminum to replace structural iron and steel. I have, however, very little hopes of the use of the metal for this purpose. At least the present knowledge which we have of the metal would not indicate a very great future for it in this direction, except, perhaps, in long cables. Aluminum wire can be readily drawn with a tensile strength of from 60,000 to 70,000 pounds per square inch, and with a reduction area of 50 per cent. This metal will have about one-third the weight of a simi-

lar strand of steel wire, and for some purposes such cables may be useful. But more probably it will be a hardened alloy of aluminum, which will be found to be ductile enough to be drawn readily into wire, which can be used most advantageously for such a purpose.

There is a prospect that some aluminum alloy with a specific gravity of not more than three to three and a half and with a tensile strength of 100,000 to 120,000 pounds per square inch can be obtained; but I cannot point to such an alloy having been successfully made which would draw into wire as yet. Certainly for such a purpose as bridge members I feel confident that aluminum will never be used, for it has not sufficient strength or hardness to compete with steel.

In this connection of hardness, although entirely irrelevant to the subject, I would call your attention to the advisability of the use of manganese steel for bridge pins, members which rarely break, but deteriorate by wear. I have lately seen results of the use of Hadfield's hard manganese steel, a photograph of which I send you with this paper, as compared with the ordinary Bessemer steel forged. The disadvantage of the metal so far has been that this hardened manganese steel is very difficult to tool; but as it will be possible to cast a thread at the ends of the pins, which can be ground to an accurate fit with nuts, I believe this material is a very valuable one for bridge pins.

Probably the largest use of aluminum in railroad work will be as an alloy with other metals. Aluminum in proportions of a few per cent. added to very many different metals gives valuable properties. Among these alloys is, of course, aluminum bronze. The alloys of from 2½ per cent. to 12 per cent. aluminum with copper have so far achieved the greatest reputation. With the use of 8 per cent. to 12 per cent. aluminum in copper, we obtain one of the most dense, finest grained and strongest metals known, having remarkable ductility as compared with its tensile strength. A 10 per cent. aluminum bronze can readily and uniformly be made in forged bars with 100,000 pounds tensile strength, 60,000 pounds elastic limit, and with at least 10 per cent. elongation in 8 inches. An aluminum bronze can be made to fill a specification of even 130,000 pounds tensile strength and 5 per cent. elongation in 8 inches. Such bronzes have a specific gravity of about 7½, and are of a light yellow color. For cylinders to withstand high pressures such bronze is probably the best metal yet known.

The 5 to 7 per cent. aluminum bronzes have a specific gravity of 8.30 to 8, and are of a handsome yellow color, with a tensile strength of from 70,000 to 80,000 pounds per square inch and an elastic limit of 40,000 pounds per square inch. It will probably be bronzes of this latter character that will be most used, and the fact that such bronzes can be rolled and hammered at a red heat with proper precautions will add greatly to their use. Metal of this character can be worked in almost every way that steel can, and has for its advantages its greater strength and ductility and greater power to withstand corrosion, besides its fine color. With the price of aluminum reduced only a very little from the present rates, there is a strong probability of aluminum bronze replacing brass very largely.

A small percentage of aluminum added to babbitt metal gives very superior results over the ordinary babbitt metal. It has been found that the influence of the aluminum upon the ordinary tin-antimony-copper babbitt is to very considerably increase the durability and wearing properties of the alloy. Under compressive strain, aluminum-babbitt shows to be a little softer than the ordinary babbitt.

A sample 1½ inches diameter by 1½ inches high began to lose shape at a pressure of 12,000 pounds. A similar sample of the same babbitt metal, without the addition of the aluminum (having a composition of 7.8 per cent. antimony, 3.7 per cent. copper and 89 per cent. tin) did not begin to lose its shape until a compressive strain of 16,000 pounds had been applied. Both samples have stood about an equal strain of 35,000 pounds. In comparative tests of the ordinary babbitt metal and the aluminum-babbitt metal the latter has given very satisfactory results. At the works of A. W. Cadman & Co., 63 Water street, Pittsburgh, a crank pin bearing of a 30 horse-power engine with the ordinary babbitt metal required attention about every three days; and after inserting in the bearing aluminum babbitt strips of about ½ inch width upon the face, dovetailed in alternately in the brass bearing, the same bearing ran under similar work for two months without requiring any attention; and when examined at the end of the two months, the crank pin was found to have become very much smoother than it was before the aluminum-babbitt had been inserted. Mr. Cadman recommends dovetailing the babbitt in strips, for the reason that it gives equal bearing all over the surface. Another advantage of this babbitt is its extreme malleability. It can be hammered out to a thin edge without cracking, whereas the ordinary babbitt is not at all malleable. An advantage of this is that for bearings, with aluminum, the babbitt can be rolled into shape for inserting in the dovetailed recesses, and the recesses can be cast and drifted out at a very small expense and without waste of babbitt.

The influence of aluminum in the manufacture of wrought-iron castings is demonstrated in the well-known Mitis process. These wrought-iron castings seem to have all the ductility and strength of wrought iron, with the advantage of the aluminum making the metal fluid so that it can be cast into shape as readily as is cast iron. The difficulty has been so far to obtain uniformly sound castings; but this has now been overcome, and there are several concerns manufacturing Mitis castings successfully.

Aluminum is also being used very successfully in steel castings, and has added very considerably to the progress which has been made within the last two years in obtaining sound steel castings. A large number of steel casting companies are regularly using the metal aluminum in quantities of several pounds of aluminum to the ton of steel. In the manufacture of ordinary steel ingots by the open hearth or Bessemer processes it has lately been found that the use of aluminum in small proportions (from ½ to 1 pound of aluminum to the ton of steel) has proved to be an economical success, preventing blowholes and unsound tops of ingots. It has been experimentally proved that the addition of aluminum to the steel just before "teeming" causes the metal to lie quiet and give off no appreciable quantity of gases. There are two theories to account for this. One, that the aluminum decomposes these gases and absorbs the oxygen contained in them. The other is that aluminum greatly increases the solubility in the steel of the gases, which are usually given off at the moment of setting, thus forming blowholes and bubbles. This latter theory is the one which at present has the greatest weight of authority. In all cases the aluminum should be thrown into the ladle just after a small quantity of steel has already entered it.

There is danger of adding too large a quantity of aluminum, in that the metal will set very solid and will be liable to form deep "pipes" in the ingots. Just the right proportion of aluminum to add requires some little experience on the part

of the steel manufacturer; but successful results have so far been secured with the amount of aluminum before mentioned—from ½ to 1 pound to the ton of steel. We have ourselves seen ingots filled within 2 inches of the top of the mold and allowed to cool without sand or stopper, and the surface of the ingot when cold was nearly as flat as if it had been sawed off.

With the use of our No. 2 metal, for adding to iron and steel, which the Pittsburgh Reduction Company sell at the rate of 90 cents per pound, the advantage it gives to the steel for the purpose mentioned above, decreasing the crop ends, will much more than pay for the extra cost of the steel. This may not, and will not, have much interest to the railroad men as a prospect of decreased price of the steel used in railroad work, but it will be of advantage in decreasing the danger of unsound steel being furnished, as is often the case now, by blooms being cut too near the crop ends.

Adjustable Bolt Dog.

This dog or driver is intended to be attached to the face plate of a lathe by a bolt and is used for driving a square or a hexagon head bolt while being turned and cut, or in fact any work having two



Adjustable Bolt Dog.

parallel sides. It is adjustable to take work from ½ inch to 2½ inches in size. The body is of malleable iron and the screws of steel. It is evident that a tool of this description will be found to be very convenient. It is made by the Parker & Knight Company of Baltimore, Md.

Consul Thomas Heenan, at Odessa, writes to the State Department that the flax fiber raised in Russia is manufactured into \$20,000,000 worth of goods annually. The linseed oil is worth \$5,000,000, and the oil cake sells for \$2,500,000. Furthermore, Russia has 13,000,000 bushels of seed to export. These are the results of cropping 3,700,000 acres. Mr. Heenan says: "The possibilities which the cultivation of the flax fiber offers to American farmers are equalled only by the surprise that such possibilities have thus far been neglected."

The merchants and manufacturers of St. Louis have formed a commercial and industrial commission in which most of the leading business men of the city are concerned. There are 15 organizations, each represented by a dual membership. There will be committees on freight, interstate commerce, insurance, bills of lading, legislative action and claims. The Executive Committee will consist of the president of the commission and the chairmen of the other committees. All committees except the Executive Committee will be composed of five members each. The commission will meet annually, the Board of Directors once in three months and the Executive Committee each month. The object is to promote the commercial and industrial supremacy of St. Louis.

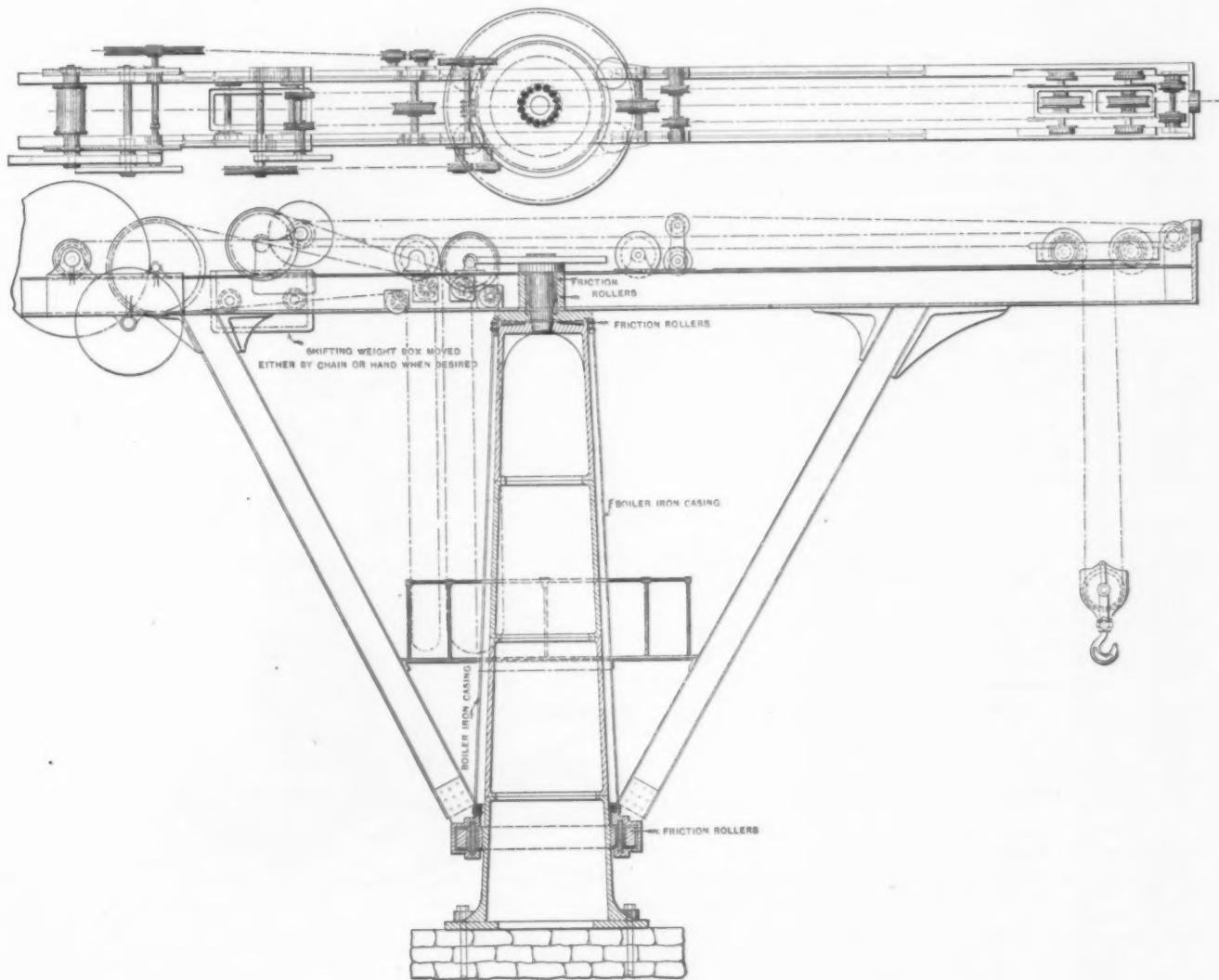
Counterbalanced Jib Crane.

The Weimer Machine Works of Lebanon, Pa., have perfected the counterbalanced jib crane of which drawings are here presented. The pillar is made in sections of flanged cast-iron cylinders. The lower section is formed with a foot for securing it to the masonry foundation, and the upper section is provided with a head having an annular recess or seat, and in the center of which is secured a pin. This pin enters a chamber in a casting which rests upon steel friction rolls placed in the annular recess. The pillar is partially surrounded by a metallic casing united with the casting at the top and with a circular casting near the bottom. This latter casting is formed with a chamber to

platform secured to the casing. The trolley is of ordinary construction, travels on the jib on one side of the pillar, and is moved by the ordinary chain and wheel mechanism. The hoisting drum and its train of mechanism are supported on the short arm of the jib at or near one end and counterbalance the longer arm thereof and the trolley. By the construction shown the thrust usually imparted to the roof of the building in which a jib crane is operated is transferred to the pillar of the crane and the strain of the roof and the walls obviated. The jib is revolved upon the pillar by a gear wheel and a worm gear operated by a chain from the platform.

It will be observed that the jib is nearly balanced by the ends extending upon opposite sides of the pillar or supporting

caused by having belts running from floor to floor; the original building having been burned by fire which originated on the first floor, and communicating with the belt well, passed from floor to floor, until the whole building was destroyed. After this shaft had been in use for a few years, its advantages were so clearly shown to engineers, architects and various fire insurance companies that the system was adopted by many of the large buildings in Philadelphia, New York and elsewhere. The advantages of the system are economy in first cost, also the saving of space required to transmit the power from floor to floor; it avoids the cutting of belt holes and the running of belting through the floors, thus preventing fire from communicating from floor to floor, and as there are no belt holes, no dust or



Plan and Sectional Elevation

COUNTERBALANCED JIB CRANE, BUILT BY WEIMER MACHINE WORKS.

receive four wheels, whose shafts are surrounded by friction rolls. To the upper side of this casting are secured I-beam braces, which are united with the lower side of the jib, as shown in the elevation. The thrust of the load upon the crane is transferred through the braces to the casting and from it through the wheels to the pillar. The braces are secured to the sides of the jib by brackets, and the jib rests upon the casting or top of the casing of the pillar. The sides of the jib are made of I-beams, and upon them is supported a weight box, which is mounted upon wheels bearing upon the flanges of said beams.

The weight box is transferred from one position to another to counterbalance the load to be carried by the crane, and is operated by a chain and wheels from a

column, that the difference in the length of the long arm of the jib, the weight of the trolley, chain and hook on this arm are counterbalanced by the hoisting, traversing and rotating mechanism on the short arm of the jib, and the weight of the article to be raised is counterbalanced by moving the weight box on the short arm of the jib in or out toward or from the pillar of the crane.

George V. Cresson of Philadelphia has brought out the improved system for transmitting power by vertical shafting. The first of these shafts was erected in 1870 in the large building belonging to the late Dr. David Jayne, which was used for manufacturing purposes, each floor being let to separate tenants, and was designed to overcome the danger from fire

other foreign matter is distributed through the building. The economy of being able to run each floor and each room independent of the other, especially when the floors are occupied by different tenants, is a feature. It is perfectly noiseless, and since the shafting takes up little room, it can be concealed.

Coal mining west of the Mississippi River is growing apace, and although the price at the mines is not very high the product is one of great importance. In 1880 the number of short tons mined was 4,584,324, but in 1889 the product had increased to 16,067,500 short tons. North Dakota, Texas, New Mexico and the Indian Territory have been added to the list of coal-producing States since 1880.

Upright Power Hammer.

The accompanying illustration shows all the improvements which have been made to date in the upright power hammer manufactured by the Belden Machine Company of New Haven, Conn. This hammer has been thoroughly tested during the past three years, and has proved to be economical and efficient. The anvil block is separate from the frame and the dies are never together when the hammer is idle. The following points are claimed by the makers to mark the superiority of this machine: The metallic spring connection, which, in connection with the spring, adds greatly to the power of the blow. The right and left adjusting nut, with two check nuts for adjusting the ram up or down. The right and left adjusting screw in the face wheel, which enables the operator to regulate the stroke and the hammer from one extreme size of stock to the other in half a minute. The adjustable brake strap. The idler, which is conceded to be the proper mode of conveying the power to the hammer. The guides, or ways, are heavy and separate from both the frame and from each other.

ANDERSON INDUSTRIES.

The Hazen Company's Wire-Nail Factory.

An establishment far above the average in all its appointments is the wire-nail factory of the Hazen Company at Anderson, Ind. It is spick-and-span new, having been started into active operation so recently as February 1. To begin with, the office building is unusually handsome and most admirably arranged for the comfort and convenience of its occupants. It is light, roomy and attractive in every respect. Besides a large general office, there are several smaller rooms for private offices, lavatories, bathroom, a spacious fire proof and store room. It is supplied with electric lights in unusual profusion. The factory building is no less pleasing in its way. All operations are conducted in one connected structure, which has an extreme length of 433 feet. The width varies. At one end the building is 130 feet wide for 109 feet of its length. This portion is occupied by the cooperage room, packing room and nail warehouse. The wire-nail factory extends the remainder of the length, or 324 feet, and is a trifle over 39 feet wide. In an annex, 90 feet long by nearly 42 feet wide, which extends alongside a portion of the nail factory, are located the company's machine shop, the engine room and boiler room. All the flooring is of maple.

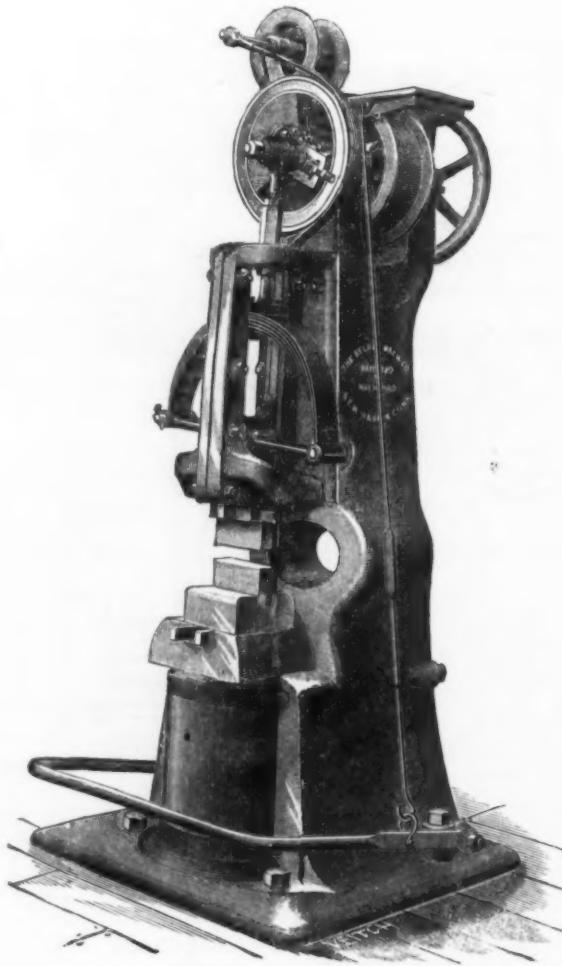
As these works make a specialty of small nails, which are usually put up in paper packages, their packing room has been carefully arranged with a view to systematizing and expediting this part of the work. The room is very large and well lighted. Around the sides bins have been put up to the number of 100, so that 100 different kinds of nails can be stored for the packers. In the center of the room shelves have been arranged to hold assorted stock to enable orders to be made up promptly. The paper boxes now being used are of an improved pattern, from which nails cannot work out until the box is opened.

The nail factory contains 75 machines, which are arranged in an original manner, which has proved to be very convenient in practical working. The main shaft runs down the center of the factory, suspended from the ceiling, and the nail machines are placed in two rows along the sides of the building, with sufficient space left to permit the operators to pass between them and the walls. The center of the

factory is thus left clear for the wire reels and the passage of materials to and fro. The machines are thus close to the windows, and the operators are able to clearly see every part of them and instantly detect anything going wrong.

The engine, boilers and water feeder were built by the Buckeye Engine Works of Salem, Ohio. A Thomson-Houston electric light plant, with 200 lights, illuminates the works at night. The machine shop is equipped with sufficient tools to enable the company to do all their own repairing. They own their own gas wells, two in number, which supply an ample quantity of gas for fuel. Shipping facilities are excellent. The Midland Railway runs alongside the building, and the floor of the factory and the shipping platform

The buildings are arranged with a ground plan closely approaching the form of a T, with the several departments in separate wings, thus giving them ample light and ventilation. They have an iron room for the receipt and storage of stock, a forge and heating department, cutting room and packing room. The works are well equipped with machinery of the most approved pattern for bolt making, but more machines are still being added. They are running full time double turn, employ about 125 hands, and thus far have been unable to accumulate any stock of bolts. Their orders come from all over the country, from the Atlantic Coast to the Rocky Mountains. Their success in thus early building up a widespread trade has been most remarkable. They own their own



The Belden Upright Power Hammer.

are on a level with the freight car floors. At the present time the company manufacture nothing but wire nails, but in the near future a wire-drawing department will be added. All nails are sent out under the Arrow brand, which is the company's well-known trade-mark. The main office is at Cincinnati, where John F. Hazen, the president, and George E. Day, the treasurer, are located. W. L. Fitch, the secretary of the company, is in charge of the works at Anderson.

The Anderson Iron and Bolt Company.

A new plant for the manufacture of carriage bolts, machine bolts, lag screws, &c., was put in operation on February 10 by the Anderson Iron and Bolt Company, of which C. S. Burr is president, L. S. Taylor vice-president and manager, John R. Brunt secretary and Thomas J. McMahon treasurer. The company were organized in October of last year, ground was broken for the works about November 1, and construction was pushed through the winter months without interruption.

gas well and have 10 acres of ground to enable them to make such additions to their plant as the growth of their business may warrant.

The Anderson Sheet Mill.

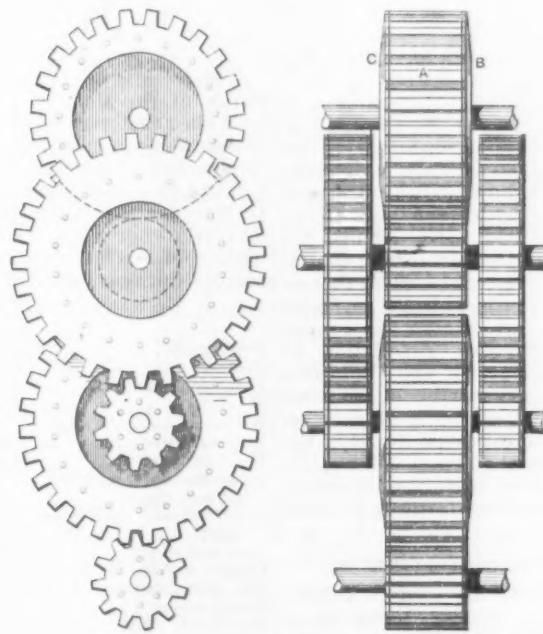
The Irondale Iron and Steel Company of Anderson, Ind., have a well-equipped sheet mill making light sheets exclusively. It was first put in operation about a year and a half since, and has enjoyed a steady run of orders, which still show no signs of diminishing. The equipment consists of six single puddling furnaces, two heating furnaces, two pair furnaces, two sheet furnaces, three annealing furnaces, two knobbling fires with room for two more, a muck and bar train and two sheet mills. The capacity of the works is 12 to 15 tons per day of No. 30 to No. 14, but they make very little of the heavy gauges. They expect soon to be able to pay more attention to the manufacture of fire bed iron, which will considerably increase their tonnage. The company roll some steel sheets, but much the larger part of their

product is iron. They manufacture common, refined and charcoal iron, and have built up an excellent reputation for the quality of their product, which is attributed to some extent to the use of natural gas as fuel, together with carefully selected stock. The entire mill is run with gas from one well, which has been the sole supply since the works were started and maintains a very uniform pressure. The product of the mill is sold in the West, going mainly to St. Louis, very little of it being marketed in Chicago or the Northwest. G. R. Root is president and general manager of the company and C. V. Erdmann is secretary.

Gearing for Electric Motors.

BY G. P. CLAPP, SAN FRANCISCO, CAL.

In various articles on electric railways I frequently notice mention being made of the difficulty of transmitting power from



A.—Rawhide or Paper.
B.—Loose Flange.
C.—Solid Flange.

GEARING FOR ELECTRIC MOTORS.

the motor to the car axle by the present system of direct gearing without a disagreeable noise. I think this evil can be overcome by arranging a system of gearing in the manner illustrated by the accompanying sketch, and made from rawhide or paper. Rawhide gearing has been made in place of cast iron, and where iron would break rawhide has stood the strain, run smoothly and almost noiselessly. The material must be cut in rings, soaked in water, and placed on the hub cylinder like washers. When a sufficient number have been placed to make the required thickness, hydraulic pressure must be applied, and the loose flange forced up tight and secured. When the material is dry, drill holes and rivet through the flanges and rawhide, then cut the teeth in the usual way. This will make a durable and noiseless wheel, and cost but a trifle more than iron.

The new wire gun invented by John Hamilton Brown of New York was tested at Fort Wadsworth, Staten Island, on Saturday, in the presence of army and navy officers, and declared by them to be "an improvement on others that have been produced in this country." The gun withstood pressures respectively of 41,500 and 60,000 pounds.

The Waterworks Association.

The American Waterworks Association, of which W. B. Bull of Quincy, Ill., is president and J. M. Diven of Elmira, N. Y., is secretary, will hold its eleventh annual meeting in Philadelphia from the 14th to the 17th inst. Among the papers to be read will be the following:

"The Beginning and Growth of the Philadelphia Works," E. Geyelin; "Riveted Steel Water Pipe," D. J. Russell Duncan; "The Columbus, Ohio, Waterworks," A. H. McAlpine; "Waterworks Securities," Wm. Rienecke; "Waterworks Notes," Chas. B. Brush; "Value of Pressure Records in Connection with Waterworks," Chas. A. Hague; "Water Meters—Cost of Setting and Maintenance," Edwin Darling; "Is the General Application and Use of Water Meters Advisable in Supplying Potable Water to Consumers, and Will the Practice Prove Remunerative to the Owners of the works?" J. Nelson

Nothing like this has ever been attempted on a large scale in this country. It would be difficult to imagine anything more interesting than, for instance, a sight of all the transformations which wool goes through from the time it leaves the sheep's back until it comes out of the loom a finished piece of cloth. Some of the processes of worsted, iron, steel, rubber, leather and jewelry manufacture could be shown in the same manner, and would make the exposition a powerful educational influence, as well as a success financially.

THE WEEK.

The two gunboats building at the Bath Iron Works will be launched in October, and the battle ship Texas, building at Norfolk, may be finished not much later.

Lima oil fuel is being introduced at the Pittsburgh rolling mills with good success.

The Government of Santo Domingo has appointed Manuel Jesus Galvan as Minister to the United States, and it is understood that he is especially instructed to negotiate a reciprocity treaty with this country.

Naval Constructor W. L. Mintonye returned from Washington, where he had been to report upon the manufacture of the armor plating at Pittsburgh for the naval vessels.

Of a total of nearly \$13,000,000 invested in Nova Scotia coal mines, Boston capitalists represent probably \$5,000,000.

Steamship agents agree that all signs point to a large emigration from Europe to the United States during the season just opening.

The demand for men in the new plate glass works at Charleroi, Pa., and other establishments, perplexes the manufacturers.

The closing of bank doors is followed of late, in frequent instances, by the closing of prison doors on the delinquent officers, and no protest is heard.

The Maine House of Representatives passed a bill providing for \$500 fine or two years' imprisonment for preventing by intimidation or force any person from entering or remaining in any man's employ.

Consul Estes, at Kingston, Jamaica, says there are 800,000 people on the island, and that if Americans want trade they should send drummers.

Manufacturers and retail druggists all over the country are reported to have combined to maintain the full price of patent medicines.

The Croton Aqueduct contractors have taken the preliminary steps in pressing their suits for \$10,000,000 damages claimed for having been compelled to do work a second time on the alleged false plea of poor work.

President Gompers of the Federation of Labor says that his organization will back the striking Connellsville cokers to the last in their demand for eight hours.

Spring seeding has commenced in Manitoba.

The nickel mines in Lancaster, Pa., have shut down, the ore being too poor to pay expenses.

Denver has abandoned its scheme for a subterranean mine at Chicago, on account of the change of site.

The attempted assassination of General Roca, Prime Minister of the Argentine Republic, is a new cause of turmoil in Buenos Ayres. A letter dated February 21, the day succeeding the event referred to,

says: "The demand for the reduction of imports is renewed, in hopes of restoring a sound currency, gold now being at a premium of 250 per cent. The average premium on gold in 1889 was 80 per cent.; in 1890 it rose to 160 per cent. The decline of imports continues at a rate that would be alarming if it were not that there is an avowed determination to cut down imports to a minimum. The official returns show that the sheep farming industry is depressed, the exports of wool in 1890 being only 262,000,000 pounds, a decline of 50,000,000 from the preceding year. This has been compensated in some manner by a notable increase in the shipments of grain, the export of wheat in 1890 reaching 320,000 tons."

There is a war upon self-binders in Davies County, Ind., where the vandals have destroyed many machines.

There are said to be 160,000,000 bricks in the Hudson River yards, left over from last year, and a new season is about to open with prices as low as \$4.50 to \$5 per 1000. Though favorable to builders, manufacturers see very small profits in the business.

The navy has purchased a paper boat. After a trial of the material for this craft at the New York Navy Yard, a New York firm was ordered to build a "whale boat gig." The frame is of wood, but the covering is of prepared paper, which, it is asserted, will withstand the changes of temperature and the effects of submergence. The trials demonstrated its merit in the latter direction, and it was found not to absorb water. It is about 20 per cent. lighter than a wooden boat of the same dimensions, and the cost is merely nominal after a mold has once been made.

The hat and cap manufacturers of this city are about to appeal to the courts for protection from alleged union extortion. Last week they issued a brief review of their grievances, in which it is alleged that their employees had assumed a malicious attitude. The workmen, they claim, have persecuted them to such an extent that business is practically at a standstill. The employers agreed, they claim, to abide by certain rules of the union, and no sooner did they settle down for peace, harmony and prosperity than the union would break faith with them and upset things generally.

Much interest has been excited in San Francisco by the display of several ingots of California tin smelted at the new mines in San Bernardino County.

It is feared in England that Newfoundland will retaliate on Canada, on the supposition that she caused the defeat of an agreement with the United States by granting licenses to American fisherman, which she has a right to do.

The Central Labor Union are excited over the report to the Legislature of the State Board of Arbitration and Mediation on the lockout of the clothing cutters of Rochester, and devoted most of their last Sunday meeting to denouncing them. The delegates were bitter in their denunciation of Florence F. Donovan, a member of the State Board. A committee was appointed to investigate the report. It was also decided to notify Typographical Union No. 98 of Brooklyn, the organization Donovan belongs to, of his action, and try to discipline him.

The chief center of attraction in Idaho now is the great Seven Devils copper district in Washington County. All the locations there carry a high per cent. of copper and more or less gold and silver. Considerable capital was invested there last year, the biggest sale being a group of mines for which \$1,600,000 was paid by a Montana company. A town called

Helena has been started near the mines, and it is predicted that in a few years it will rival Butte, the biggest mining town in Montana.

OBITUARY.

EDWARD S. TOBEY.

Edward S. Tobey of Boston died March 29, at the age of 79 years. Mr. Tobey was for a long time engaged in foreign commerce, and made several voyages abroad. He was one of the organizers of the Boston Board of Trade, and one of Harrison Loring's associates in the establishment of the Union Steamship Company in 1861. A year later he was one of Secretary Stanton's confidential advisers to devise means of destroying the rebel ram Merrimac, and still later in the war assisted Secretary Chase in determining the financial policy of the Government. One of his numerous public services was to assist in the founding of the Massachusetts Institute of Technology.

P. W. SHEAVER.

P. W. Sheaver, a well-known mining engineer and geologist, died at Brown's Mills, N. J., March 26. He was born in Dauphin County, Pa., on March 31, 1819. He assisted in 1838 in making the first geological survey of the State, tracing the line of mountains known as Second Mountain, which forms the basis of the Southern anthracite coal field. He secured the passage of the bill in 1849 for the continuation of the survey, and had Z. P. Leslie of the University of Pennsylvania made geologist. Mr. Sheaver was a member of the Benevolent Association of Pottsville, a manager of the Children's Home; he was also a member of the Association for the Advancement of Science, the American Philosophical Society, the Academy of Natural Sciences of Philadelphia, the Historical Society of Pennsylvania and the American Institute of Mining Engineers.

AUGUSTUS SCHOVERLING.

Augustus Schoverling died in Düsseldorf, Germany, on Sunday, March 29, of pneumonia, in his fifty-first year. Mr. Schoverling was born at Osnabrück, Hanover, in 1840, and was the youngest of 12 children. He received a liberal education and came to New York in 1859, at which time he entered the house of Hermann Boker & Co., then at 50 Cliff street. As a result of close application he was rapidly promoted, until he was given the entire charge of the gun department. In 1865 he formed a partnership with a fellow clerk, Charles Daly, and began business in a part of the second floor of 7 Barclay street. Their business grew rapidly, and Joseph Gales, the surviving partner of the old house of A. W. Spies & Co. joined the firm. Some time since Mr. Schoverling accepted the agency of H. Pieper, Liege, manufacturer of breech loading shot guns, and to this department he gave his entire personal efforts. The past three years he has spent chiefly in Europe, owing to a heart trouble which forbade too close application to business. On March 4 he left New York with the expectation that another year abroad would enable him to return to his home permanently. By the time he had reached Düsseldorf he had grown so much worse that the physicians gave him no hope. His wife and five children were with him at the time of his death. He was, though quiet and reserved in demeanor, one of the most genial of men and made fast friends of all with whom he became associated. He was the soul of honor and greatly beloved by those who knew him best. His home for many years was at Fort Hill, S. L., where he dispensed a warm-hearted hospitality.

A. S. CLARK, president of the Clark Machine Company, at Turners' Falls, Mass., is dead of pneumonia at the age of 74 years. Mr. Clark had been one of the most prominent and respected residents of Turners Falls for 21 years, and had built up a large and profitable business.

WISTAR MORRIS, head of the iron firm of Morris, Tasker & Co., Philadelphia, and, in point of service, the oldest member of the Board of Directors of the Pennsylvania Railroad Company, died on March 24, at his home at Overbrook, near Philadelphia.

W. A. GUENTHER, senior member of the firm of W. A. Guenther & Sons, Owensboro, Ky., died on March 9, in the fifty-sixth year of his age. Mr. Guenther had been in ill-health for a number of years, and the business has been under the active management of his sons. His death, therefore, will not seriously affect it, and it will be continued by the sons as formerly.

Mexico's Importations.

The recently organized Bureau of Statistics of the Mexican Republic has just published tables showing the commerce of Mexico during the fiscal year 1889. The total value of the imports for 1889 was \$40,024,894 and the duties collected thereon were \$22,477,962, or 56 per cent. The following shows the values of the various classes of merchandise imported and the duties collected thereon:

	Values of imports.	Duties collected.
Free goods.	\$13,506,230	
Cottons.	7,534,088	\$7,447,394
Linen and hemp.	674,029	671,590
Woolens.	1,613,186	1,986,020
Silks.	394,691	378,614
Silk mixtures.	394,889	410,419
Food products.	4,893,706	3,789,270
Stone and earthen ware.	81,815	41,244
Glass and china.	607,727	686,884
Gold, silver and platinum.	320,843	27,967
Iron and steel.	1,510,120	1,250,480
Copper and its alloys.	593,166	324,225
Tin, lead and zinc.	75,968	39,289
Small wares.	658,853	505,497
Machinery and apparatus.	539,582	128,705
Carriages and wheelwrights' goods.	213,796	116,206
Arms, powder and ammunition.	280,453	127,830
Wood and its manufactures.	473,684	368,523
Paper, cardboard and its applications.	1,352,143	1,161,250
Skins and goods of leather.	414,109	290,211
Medicinal drugs.	1,697,830	907,448
Miscellaneous.	2,198,965	1,675,382

The bulk of the machinery imported paid no duties, and is included under free goods. The United States heads the list of the countries whence goods were imported, with \$22,689,420 in value of imports and \$9,169,787 duties paid. England ranks next; value, \$6,337,980; duties, \$5,083,870. France, value, \$4,958,568; duties, \$3,846,252. Germany, value, \$2,842,932; duties, \$2,310,015. Spain, value, \$1,920,942; duties, \$1,177,177. Italy, Belgium, Switzerland, Austria and other countries follow with a great falling off in the volume of trade.

Bolckow, Vaughan & Co. enjoy the distinction of being the largest firm in England. There are employed in the various departments 13,075 workmen, receiving over \$4,500,000 annually in wages. The chief products last year were 1,877,694 tons of coal, 597,056 tons of coke, 1,877,694 tons of iron ore, 478,749 tons of pig iron and 194,077 tons of finished steel. This is very well for England, but America has firms employing more men and doing a much larger business than this.

The Iron Age

New York, Thursday, April 2, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Modern Navies.

The perplexities which beset naval authorities the world over have been again fully illustrated in the discussion of a paper just presented before the Institution of Naval Architects by Lord Brassey. The latter advocated the abandonment of monster guns, and urged with Admiral Scott the limitation of weight to 30 tons, which has a power of penetration of 21 inches of armor at 1000 yards. It is somewhat amusing to find so high an authority as Admiral Coulomb voicing the sentiment of many laymen when he states that the question of guns is one of pure theory, because no one has a scrap of information as to how an action will be fought. "If," he said, "it had so happened that a battle had been fought and the 110 ton gun had chanced to plump a colossal shell into an ironclad and blow her up, then nothing too good for the gun could be said." It is not unlikely that the revulsion of feeling against monster guns among the authorities of the British Navy is to some extent due to the uncomfortable experience they have had with some of their large built-up guns, in which there have been a number of failures. It should be noted, too, that some of the objections raised against the difficulty in handling them hardly apply to heavy ordnance for shore and harbor defense.

Lord Brassey takes no exception to the standard proposed by the Government, that the strength of the British Navy shall be equal to that of any two other powers combined, but he limits this only to the line of battleships and their auxiliaries. For cruisers the increase of the requirements must be drawn from the tonnage of commerce to be protected. He takes quite radical ground against the continuance of the policy of building enormous battleships, holding that they should not exceed in dimension 10,500 tons, and urges the construction of an adequate number of "lookout ships" and torpedo gun vessels as the auxiliaries of the battleships. For coast and harbor defence he insists upon rams, monitors and armored torpedo vessels, choosing in the monitor a type of vessel against which foreign naval powers have shown much prejudice.

We question whether our own people are ready to accede to the building of any navy in rivalry with that of Great Britain. All that we need is that our country be protected against invasion, and that our navy possess the capacity to do injury to the commerce of other maritime powers which will cause them to pause before they invite such disaster. Thus far we have

wisely developed the fast and lighter commerce destroyer, and are making a beginning in building battleships to protect us against invasion. We are rapidly acquiring the plant for building the heavier type cheaply. We must, therefore, while adding to the list of cruisers, acquire a fleet of battleships of moderate size, and make more extensive preparations for coast and harbor defense. That this is a herculean task may be gathered from the statement recently made to us by a leading naval officer, who, in reply to our question, what was the minimum number of ships required to protect our great coast line, replied, "Forty line-of-battle ships and the due proportion of fast cruisers." We are only at the threshold of the work which is necessary to secure us against wanton attack.

The Freedom of Labor.

A condition of unusual turmoil and discontent prevails this spring to a wide extent in manufacturing communities East and West, and it is no departure from the truth to say that leaders among the several trades seem more and more inclined to an arrogant self-assertion. Unless signs fail the tendency noticed is likely to become more and more pronounced as the season advances. The fact is much to be deplored as disturbing important industries, to the pecuniary detriment of all concerned. Enterprise is checked and capital made timid. Comparatively few ventures will be undertaken if the disturbing elements are such that not even an approximate calculation can be made of the reasonable margin of profit as the result of the endeavor. We have said that wage earners are prone to arrogance. Within legitimate bounds the objects sought for in the organization of labor meet with approval by all who have an intelligent conception of the possible attainments of workingmen. Public sympathy is enlisted in their behalf and the action of unions is vindicated in the courts and by boards of arbitration. But of late there has been an alarming frequency of overt acts, which as a rule meet with prompt rebuke by the enforcement of severe penalties.

In regard to these it must be noted that the provocation to trouble does not ordinarily arise from questions of wages or hours per day, but from a combined attempt to coerce employers in the matter of hiring or discharging men. It is the attempt to dictate in this regard which at once becomes arrogant and untenable in point of law. Labor unions cannot maintain themselves in this false attitude. The action becomes "conspiracy" and has been so laid down in the courts beyond a question. And yet the issue thus presented contains a principle which the unions will relinquish only at the latest moment. The position to which they have gradually drifted, and now boldly defend, is a long advance from the original platform of rights and grievances. In nautical phrase it is high time to 'bout ship and find deeper water. In the Maine Legislature a

bill has been introduced providing a fine of \$500 and two years' imprisonment "for preventing by intimidation or force any person from entering or remaining in any man's employ." It was a contest over the right to discharge or employ that caused the defeat of Lee and Powderly in their struggle with the New York Central Railroad Company. The right is one that is inalienable, and to dispute it is to invite defeat, as time will show.

At the present stage of the labor controversy it is satisfactory to observe that the New York State Board of Arbitration, which in some quarters has been suspected of undue leaning toward the labor interest, although it incurred the furious denunciations of General Master Workman Powderly, proclaims in the case of the clothing cutters at Rochester that the boycott must sooner or later result in the "disruption of business relations and destruction of industries," and suggests that "in so far as the laws of the State fail to protect employers and employees alike in the prerogative of equal rights to buy or to sell the use of skill and labor, they are deficient and at fault."

The law of progress in its workings to beneficent results shows that in every excess there follows reaction. The most natural outcome of combination on the one side, if made an instrument of extortion, is counter combination. In San Francisco, where strikes have been most stubbornly contested, it is said that "the end of it all will probably be a confederation of manufacturers to offset the trade confederations, and a contest similar to that which has been just concluded in Australia." Far better is it that "equal rights" in the meaning of the State Board of Arbitration should be fully recognized and resolutely maintained, and among the foremost of these, as specified by the proposed Maine law, is the right to enter or remain in any man's employ, secure from all liability to intimidation, menace or extortion in the exercise of that right. If laws fail to protect employers and employees alike in this "prerogative of right to buy or to sell the use of skill and labor," they lamentably fail.

"The superintendent of a pulp works at Marion, Ind., was arrested on the 25th for working his men over eight hours for a day's work." This announcement in the press dispatches called attention to a law on the Indiana statute books, but whose enactment has not received much notice outside of that State. The arrest referred to is the first attempt thus far known to enforce the provisions of the law, which was approved March 6, 1889, and makes eight hours the legal day's work for all classes of mechanics and workingmen except those engaged in agricultural or domestic labor. It permits overwork for an extra compensation by agreement between the employer and employee, but otherwise it makes the exactation of more than eight hours' work a misdemeanor, punishable by fine not greater than \$500. Indiana employers believed it necessary, in order to avoid incurring the penalty of the law,

to hire their workmen by the hour. When the cause came up for a hearing, however, the law was promptly pronounced unconstitutional.

Teaching the Analysis of Cost Sheets.

To the majority of graduates of our technical schools, when they first reach positions of authority and responsibility, one grave defect in their education becomes at once apparent. They are rarely taught that all their work, all their endeavor, must be directed in such a way that it tells most favorably on the annual balance sheet, due allowance being made for keeping equipment and plant up to the maximum efficiency. Success or failure depends upon the showing made, however great and commendatory the achievements in a professional sense may have been. To an engineer, a manufacturer or a business man the balance sheet is the one document which he must study with absorbing care. To the graduates of technical schools the cost account is generally that to which they must turn. Nothing approaches in importance the ability to subject it to the closest analysis. To waste time and energy in whittling down minor items of expenditure while the larger sums go unheeded is disastrous, and yet it is the experience of many manufacturers that they are approached with elaborate schemes to save cost when complete success would not warrant even a moderate outlay of capital.

We do not claim that it is expedient, if it were possible, to equip students with knowledge to guide them in judging of costs in different lines of engineering and metallurgy, but we do believe that it would be wise to teach them more general principles which must underlie their analysis. They should have some guidance in learning how to search quickly for the items leaving most room for improvement, to acquire some perspective, so that unimportant points do not usurp their attention. Of course a discussion of the commercial policy of manufacturing enterprises underlies the study of such a subject. The students may learn that there are circumstances when it pays to waste, that conditions may arise when simple, inexpensive appliances are preferable to tools representing the latest progress, that rough work is good enough in one place and fatal in another.

We are inclined to believe that few of our college professors keep in sufficiently close touch with business affairs to feel competent guides in work of this kind, but we do believe that every technical institution has among its graduates men who, having themselves keenly felt the absence of hints in their own career, would be happy to aid their successors in the profession with occasional lectures on the business side of their calling.

The growth of the cities and towns in the Indiana gas region shows a steady increase. This is very plainly perceptible to those who have occasion to make periodi-

cal visits to that section. There may still be doubters who will express fears of the permanence of the supply of natural gas, but the facts are that the old wells continue to yield abundantly, and new ones are continually being sunk to add to the supply. The larger cities and towns show most substantial growth, and are conspicuously prosperous, while the smaller towns are rapidly building up industries and adding to their population. Greater interest is now being taken in this section on account of the recent development of oil fields north of Montpelier, which are producing oil of a quality similar to the Lima oil of Ohio. The producers are carefully concealing the yield of the wells, but from the fact that they are drilling more wells, leasing more territory and shipping in large quantities of supplies, it is reasonable to suppose that the results thus far must be very encouraging to those interested.

Coke Consumers and the Strike.

We print elsewhere the sliding scale for the settlement of wages in the Connellsville coke district, which is generally attributed to Andrew Carnegie. The men denounce it vigorously, and deplorable scenes have taken place in the coke region which certainly rob the men of any sympathy they may have had a possible right to claim. We are inclined to believe that it is not the wage earner in the industry who has any serious cause for quarreling with the scale, but that it is the consumer of coke who has every reason to be alarmed and dissatisfied. The first thing which will strike the furnace man and the iron founder is that the sliding scale fixes \$1.75 as the minimum price. It is practically an announcement on the part of those who control the supply of Connellsville coke that they are willing to enter into a lasting treaty of peace with their men on the principle that both parties together can make the consumer pay. It is possible that this course is necessary, from their point of view, on account of the low price at which long-time contracts have been made with the greatest consumer outside of the Carnegie interests. It does not, of course, follow that if \$1.75 is the minimum rate of the sliding scale the coke manufacturers will not at times sell their product at lower figures. But in the slang of Wall street coke will be "pegged" at \$1.75, and affairs must take an extraordinary turn indeed to bring about concessions to the outside furnace consumer, who is also a business rival of the parties controlling the raw material.

We know that it is unjust to the coke interest to draw from the history of the trade the conclusion that this fuel can be put on the market at prices approaching the lowest reached in times of depression and cut-throat competition. But it will be very difficult to make furnace men in Western Pennsylvania, Ohio, West Virginia and the Chicago district accept the statement that \$1.75 coke does not yield

very good profits, even on the basis of the present valuation of coke lands, which is far in excess of what they cost those controlling them.

The Connellsville coke interest commands the situation. It is quite useless for any one to disguise that fact. Its commanding position is due to the quality of the product, principally, but it is due also in some measure to the lamentable ignorance and conservatism which prevails concerning the methods in the manufacture of coke. Americans seem to be quite unable to get over the absurd idea that the beehive oven is the only apparatus in which coke fit for furnace use can be made, and that coal which will not coke in that crude apparatus is valueless for the manufacture of furnace coke. Any one who has observed what poor raw material coke makers in France, Belgium and Germany can convert into good furnace fuel at a low cost, at the same time making much money out of the by-products, must be amazed at American indifference. The salvation of the furnace men of the great Central West lies now in making themselves independent of the Connellsville district. If experiments are too costly for the individual, let them associate themselves in the work.

The report that an English syndicate was negotiating for the control of the Tennessee Coal, Iron and Railway Company is officially denied. The report is believed to grow out of negotiations abandoned a long time ago.

Fraser & Chalmers have paid 14 per cent on £575,000, the capital of the American Company, and 10 per cent. on £670,000, the capital of the English company, out of profits in 1890.

The official report of the famous Annapolis armor plate trials has been published, richly illustrated, in No. 56 of the "Proceedings" of the United States Naval Institute, published at Annapolis.

A lecture on "High Explosives in Warfare," delivered by Commander F. M. Barber, U. S. A., before the Franklin Institute, has been reprinted in pamphlet form.

The admirable series by W. F. Durfee of Birdsboro in the *Popular Science Monthly* continues. The January number had "Iron Mills and Puddling Furnaces;" February, "Iron Smelting by Modern Method;" and March, "Iron Working with Machine Tools."

The great coal miners' strike, predicted for May 1, is, by advice of President Gompers of the American Federation, to take place immediately.

The Illinois Steel Company on Monday brought suit in the Circuit Court of the United States against the Kilmer Mfg. Company for infringement of the now famous Garrett rod mill patents, under which, with few exceptions, the successful rod mills in the United States have been built. The suit is for \$100,000 damages, an accounting of profits, and an injunction, both preliminary and final, to stop the running of the Kilmer mill.

strike caused a great deal of excitement in the region, as the men were totally unprepared for anything of the kind. A number of meetings of the strikers were at once held, the largest one taking place at Mt. Pleasant on Thursday, the 26th ult. This meeting was addressed by a number of labor leaders in the Connellsburg region, and after a session lasting several hours, the following resolutions were unanimously adopted:

Resolved, That we consider the scale as presented by the operators of the coke region to said employees as an insult not only to the miners, but to all who earn their bread by the sweat of their brow; and, be it further

Resolved, That we consider the scale as preposterous, and that our intention is to remain idle for one year rather than accept such terms; and, be it

Resolved, That we respect our officers as efficient to look after our interest.

Notwithstanding the determination contained in the above resolutions, a number of coke plants have already resumed operations, and as time passes the number of men at work increases very materially. It is believed that this move of the coke operators to end the strike will be successful, although it is not expected that more than a fair-sized percentage of ovens will be in operation for some time. This will not be because of the refusal of the men to return to work, but will be caused by the fact that the operators do not expect a heavy demand for coke until there is some decided improvement in the iron trade. It is believed, however, that in a very short time sufficient ovens will be in operation to fill all the demands that may be made on the operators for coke. That it is not the desire of the coke operators to operate their plants in full is attested to by the fact that the sliding scale of wages printed above was posted at only 17 of the works of the H. C. Frick Coke Company. At ten of these works operations were resumed the next day after the sliding scale had been posted. The attempt of the operators to break the strike has resulted in some serious rioting. It is the general belief that the strike has been effectually broken, and that in a very short time the operators will have all the men necessary to operate all the ovens that they may desire to start up.

Bids for Gun Carriages.—Bids were opened in the Ordnance Office of the War Department for the construction of 25 carriages for 12-inch breech-loading rifled mortars. Only two bids were received. The Morgan Machine Works of Alliance, Ohio, offered to build eight carriages, complete, for \$65,405, delivering the first one within 18 weeks and the other seven at the rate of one every six weeks after, or 25 carriages for \$7725 each, the delivery of the first eight to be as above, and the remaining 17 at the rate of one every three weeks. The Builders' Iron Foundry of Providence, R. I., offered to build eight carriages for \$14,000 each, or ten for \$130,000, and each additional carriage for \$12,500, delivery of the first carriage to be in one year, the second four months later, and the third three months later, and the remainder at intervals of two months each. The bid of the Morgan Iron Works is by far the lowest and the delivery much the more prompt, but the Builders' Company claim to control the American right to a foreign patent, which they assert will prevent any one else from building in this country such carriages as the Government wants.

The Herreshoff Mfg. Company have entered into a contract with a New York gentleman to build a cutter of the 46-foot class, having a water-line length of about 45 feet 3 inches; beam, 13 feet; draft of water, 10 feet 2 inches, and of 38½ tons displacement.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., March 31, 1891.

On Wednesday of next week, April 8, and continuing for three days, will be held at the national capital a celebration of the first centennial of the establishment of the patent system of the United States, by the inventors and manufacturers of patented inventions.

The programme will best convey to the industrial world, so largely interested for its great expansion in the United States in patented inventions, the scope of the display.

The first public meeting will be held on April 8, 1891, and will be presided over by the President of the United States.

The second meeting on the same day will be presided over by the Hon. John W. Noble, Secretary of the Interior.

A special reception to inventors and manufacturers and the ladies who accompany them will be held at the Patent Office, April 8, 9 to 11:30 p.m., by the Secretary of the Interior, and Charles Eliot Mitchell, Commissioner of Patents.

The third meeting, April 9, will be presided over by Frederick Fraley, LL.D., President of the National Board of Trade and the American Philosophical Society, and charter member of Franklin Institute.

The fourth meeting, April 9, will be presided over by Prof. S. P. Langley, LL.D., Secretary of the Smithsonian Institution.

ANNIVERSARY DAY, APRIL 10, 1891.

Anniversary of the signing of the first American patent law—"An Act to Promote the Progress of the Useful Arts"—by George Washington, 10 a.m. excursion to Mount Vernon, where an address will be delivered by J. M. Toner, M. D., of Washington, upon "Washington as an Inventor and Promoter of Improvements."

The fifth meeting, April 10, will be presided over by Prof. Alexander Graham Bell. Addresses upon the following subjects are promised at the public meetings:

Edward Atkinson, Ph.D., LL.D., of Massachusetts.—"Invention in its Effects upon Household Economy."

Dr. John S. Billings, Curator U. S. Army Medical Museum.—"American Invention and Discoveries in Medicine, Surgery, and Practical Sanitation."

Hon. Samuel Blatchford, Juujustice of the Supreme Court of the United States.—"A Century of Patent Law."

Cyrus F. Brackett, M. D., LL.D., of New Jersey, Heury Professor of Physics, College of New Jersey, Princeton.—"The Effect of Invention upon the Progress of Electrical Science."

Hon. Benjamin Butterworth, of Ohio, U. S. House of Representatives.—"The Effect of our Patent System on the Material Development of the United States."

Otto Chanute, of Illinois, President of the American Society of Civil Engineers.—"The Effect of Invention upon the Railroad and other means of Inter-Communication."

Prof. F. W. Clarke, S. B., of Ohio, Chief Chemist U. S. Geological Survey.—"The Relations of Abstract Scientific Research to Practical Invention, with Special Reference to Chemistry and Physics."

Hon. John W. Daniel, of Virginia, U. S. Senator.—"The New South as an outgrowth of Invention and the American Patent Law."

Major Clarence E. Dutton, Ordnance Department, U. S. A.—"The Influence of Invention upon the Implements and Munitions of Modern Warfare."

Thomas Gray, C. E., B. Sc., F. R. S. E., of Indiana, Professor of Dynamic Engineering, Rose Polytechnic Institute, Terre Haute.—"The Inventors of the Telegraph and Telephone."

Prof. Otis T. Mason, Ph.D., of Virginia, Curator U. S. National Museum.—"The Birth of Invention."

Hon. Charles Eliot Mitchell, of Connecticut, Commissioner of Patents.—"The Birth and Growth of the American Patent System."

Hon. O. H. Platt, LL.D., of Connecticut, U. S. Senator.—"Invention and Advancement."

Col. F. A. Seely, of Pennsylvania, Principal Examiner U. S. Patent Office.—"International Production of Industrial Property."

Hon. A. R. Spofford, LL.D., Librarian U. S. Congress.—"The Copyright System of the United States: its Origin and its Growth."

Hon. Robert S. Taylor, of Indiana.—"The Epoch Making Inventions of America."

Robert H. Thurston, A. M. LL.D., Doc. Eng., of New York, Director and Professor of

Mechanical Engineering, Sibley College, Cornell University.—"The Inventors of the Steam Engine."

William P. Trowbridge, Ph.D., LL.D., of New York, Professor of Engineering, School of Mines, Columbia College.—"The Effect of Technological Schools upon the Progress of Invention."

Hon. Edwin Willits, of Michigan, Assistant Secretary of Agriculture.—"The Relation of Invention to Agriculture."

Hon. Carroll D. Wright, M. A., of Washington, Commissioner of Labor.—"The Relation of Invention to Labor."

Meetings for the organization of the National Association of Inventors and Manufacturers will also be held.

On centennial day, April 10, 1891, there will be a parade of the regular troops of the garrison of Washington and the national guard of the District of Columbia and a civic display.

MANUFACTURING.

Iron and Steel.

We are advised that the report that the blast furnace of the Dunbar Furnace Company at Dunbar, Pa., which has been idle for some time, would be put in blast at an early date is incorrect.

The Irongate Rolling Mill Company at Irongate, Va., are doubling the present capacity of their rolling mill, having recently ordered 13 carloads of new machinery.

At Suwanee, Ga., parties are prospecting with a view of establishing a steel plant to manufacture steel by the direct process.

It has not been necessary to close down the blast furnace of the Raney & Berger Iron Company at New Castle, Pa., owing to the fact that the firm had a large amount of coke on hand before the strike took place. It is probable that before long the blast furnace plant of this firm will be completely remodeled, and four Whitwell hot-blast stoves erected.

The blast furnace of the Etna Iron Works, Limited, at New Castle, Pa., still continues in operation. The firm have a large amount of coke on hand, which will insure steady operation of the furnace.

The judgments entered in New York City last week against the Columbia Iron and Steel Company of Pittsburgh by Neal Brothers, iron brokers, of that city, have been withdrawn. It is understood that an arrangement has been made satisfactory to both parties.

At Pittsburgh last week a petition was presented in the Orphans' Court by James J. Donnell, J. Painter, Jr., William G. Park and David E. Park, executors of the estate of Captain R. C. Gray, deceased, asking permission to sell his interest in the firm of Park, Brother & Co., Limited, proprietors of the Black Diamond Steel Works, located in Pittsburgh. The interest has already been appraised by the court, after the report of an appraiser had been excepted to, and the court fixed the amount at \$559,179.50. This the executors desire to sell by agreement with the heirs of Captain Gray, and the court issued a decree ordering the publication of the proposed sale to be inserted in an official paper for a period of three weeks, and a return of the petition to court on April 18.

The rolling mill and furnace No 2 of the Stewart Iron Company, at Sharon, Pa., shut down on March 25 for an indefinite period. While idle the furnace will be thoroughly repaired.

Walter Crafts, receiver of the Anniston Pipe Works, Anniston, Ala., has announced that the works would begin operations at an early date.

The plate mill of the Paterson Iron Company, Paterson, N. J., which closed down a few weeks since, will either be sold or removed to some other location. The company have decided not to start it up again.

The Donaldson Iron Company, of Emaus, Pa., have secured a contract for \$24,000 worth of iron pipe and fittings for the city of Keene, N. H.

The Grand Trunk Railway will establish a rolling mill at Point St. Charles, Quebec, to cost \$50,000.

The Hattie Ensley Furnace, at Sheffield, Ala., recently turned out 201 tons in one day, although the stack was built as a 125-ton furnace.

At a recent meeting of the directors of the Lone Star Iron Company, at Jefferson, Texas,

a committee of three was appointed to solicit subscriptions for the establishment of a steel plant in connection with the blast furnace. It is thought possible to raise \$1,000,000 for this purpose.

The Valentine Iron Company of Bellefonte, Pa., purchasers of the property of the Center Iron Company, have decided to issue \$70,000 worth of bonds in order to put the Center Furnace in operation.

About 100 men have been suspended from the force of the Allegheny Bessemer Steel Works, at Duquesne, Pa., owing to the small supply of coke.

The employees of the Reading Iron Company, Reading, Pa., have accepted a reduction in wages April 1.

The Richmond Standard Spike and Iron Company, at Irongate, Va., will have 300 men at work within 90 days if quarters can be secured for them. With this in view the company have contracted for the immediate erection of ten double tenement cottages.

The puddlers' strike at Painter's mills, Pittsburgh, Pa., has been settled and the men have returned to work.

The Crane's Nest Coal and Iron Company at Lynchburg, Va., of which F. L. Lee is president, have recently purchased a large tract of iron land in the vicinity of Duncannon, Va., and will develop the property. A furnace will also be built.

A rolling mill for the manufacture of bar iron and cotton ties is to be erected this year at Anderson, Ind., under the auspices of Cleveland parties, who made arrangements for a site there the past week. They weighed the respective advantages of Alabama and Indiana, and finally decided in favor of the latter.

Hon. F. G. Niedringhaus of St. Louis, in an interview recently, said: "Our plans for the tin-plate works have long been prepared. All we have been waiting for was the closing of North Main street. That has been done, and we are now pushing the new works forward as rapidly as possible. There will be a number of buildings erected near our present rolling mill, at North Main and Angierot streets, the largest being 100 x 100 feet, and the size of the numerous outbuildings correspondingly large. We will be turning out tin plate there very soon."

It is rumored that a large steel plant is to be built at Madison, Ill.

It is stated that the Cloverdale Iron and Land Company are now in negotiation with Eastern parties for the establishment of iron works at Cloverdale, Va.

Plans are reported to be in preparation and orders are placed for machinery for the establishing of a cotton-tie factory at Cardiff, Tenn. The Cardiff Coal and Iron Company are interested in this enterprise.

Harris Brothers of St. Paul, Minn., are at the head of an enterprise that proposes to build a \$200,000 rolling mill at Minneapolis. The main building will be 340 x 165 feet, built entirely of brick.

The Muncie Nail Company, at Muncie, Ind., are running their nail factory very regularly, and marketing their product as fast as it is made. Their works were built to manufacture iron nails, but their output is now largely steel nails, made from slabs purchased of steel works located elsewhere. The puddling furnaces are running on muck bar for shipment to other works. Natural gas is used exclusively by this company, and their nail kegs are branded "Natural Gas." They have had no trouble whatever in getting an adequate supply of gas from the time their plant was started at Muncie, now some two years since.

An effort is being made to organize a solid financial company for the manufacturing of basic steel at Birmingham, Ala., it having been demonstrated by practical experiments in a small way that it can be made a commercial success from Birmingham irons.

Furnace No. 4 of the Tennessee Coal, Iron and Railroad Company, at Ensley, Ala., which has been idle for several months undergoing repairs, will be put in blast soon after April 1.

The annual meeting of the Tennessee Coal, Iron and Railroad Company will take place the first Monday in April, at Tracy City, Tenn., the legal headquarters of the company.

The courts granted the appointment of a receiver for the Mary Pratt Furnace Company of Birmingham, Ala., Z. N. Nabors being named. The receivership was for the purpose of settling disagreements existing among the stockholders, and not from any financial embarrassment.

King Henry, one of the new De Bardeleben furnaces at Bessemer, Ala., which has recently

been raised 10 feet in height, was blown in on the 23d ult. The Little Belle, belonging to the same firm, which is a furnace of 60 tons daily capacity, has been and is averaging 80 tons per day.

The Birmingham Furnace and Mfg. Company's furnace, coal and ore properties at and near Trussville, Jefferson County, Ala., which furnace was erected some two years ago by Ewing & Hoggsett of Uniontown, Pa., has been leased to and will be operated by Messrs. Gilreath, Hardie & Spencer of Birmingham, Ala. Mr. Gilreath is president of the Morris Mining Company. The lease is for five years, with the privilege of ten, with option to purchase. They will erect 100 more coke ovens at their coal bank and otherwise improve the properties to the successful operation of the plant.

The Cumberland Gap Charcoal Iron Company at Middlesborough, Ky., now have 50 ovens, a furnace 65 x 14 feet, with a daily capacity of 65 tons, and have recently laid the foundation for the blowing engines.

There is a statement current to the effect that the Scottish Middlesborough Land Company, Limited, have been organized, with a capital stock of \$1,000,000, to establish iron works, rolling mills and pipe works at Middlesborough, Ky.

It is stated that Howard & Sears' contemplate the establishing at New Castle, Va., of a plant for the manufacture of steel by the Adams direct process.

J. H. De Loache is pushing the finishing masonry on Woodstock No. 2, at Anniston, Ala., which has been idle for repairs for some time.

Engineers are now engaged at Irongate, Va., laying out the site for an 80-ton blast furnace, the construction of which will be commenced as soon as the plans are matured.

The Southern Iron Company, at Attalla, Ala., have commenced work on their charcoal ovens, having recently completed their machine shop and foundry. This concern will manufacture grates, mantels and architectural iron work.

A company has been organized at Renfrew, Ala., with a view of encouraging the establishing in that town of a rolling mill and pipe works.

At Talladega, Ala., the Alabama Land, Iron and Furnace Company are making preparations to shortly commence the erection of a 125-ton furnace.

Negotiations have been successfully terminated at Martinsburg, W. Va., between the Martinsburg Mining and Improvement Company and Merwin MacKaign of Cumberland, Md., looking to the transfer of an iron and steel shafting plant to Martinsburg.

Parties from Richmond, Va., and Lynchburg are reported to have purchased iron property at Mount Athos, Va., where a company will be organized and an iron furnace erected.

The new iron furnace at Jefferson, Texas, recently completed by the Lone Star Iron Company, has been blown in. At a recent meeting of the company it was decided to operate a steel plant in connection with the furnace, and steps were taken looking to this end. It is proposed that the new plant will cost \$1,000,000, and that additional furnaces will follow.

At Grand Rivers, Ky., two iron furnaces, each of 60 tons daily capacity, are being erected and will be finished within the next month or so.

The work of removing the South Boston Iron Works to Middlesborough, Ky., is about finished, and the company will in the future be known as the Middlesborough South Boston Iron Works. This concern have a heavy contract with the United States Government for castings for ordnance.

It is announced that the Birmingham Furnace and Mfg. Company, at Birmingham, Ala., have passed into the control of a syndicate composed of Joseph Hardie, Belton Gilreath and James Spence. The furnaces of this company at Trussville, Ala., have been idle for some time, but will now be blown in and the entire plant run to full capacity.

The rebuilding of furnace B of the Crane Iron Company, Catawba, Pa., will soon commence, plans for an enlarged modern furnace having been accepted by the company.

Machinery.

The Shendun Machine and Repair Works were recently incorporated by citizens of Shendun and Port Republic, Va. The president of this company is E. R. Armentrout, W. L. Harper, secretary and treasurer, and S. E.

Boyd superintendent. This company is now erecting at Shendun a large corrugated iron building 108 x 105 feet, where 75 men will be employed when in operation, repairing engines, boilers and other machinery and agricultural implements, as well as manufacturing many articles in iron and wood.

The Magic City Machine Company of Birmingham, Ala., are adding new machinery.

The Bristol Foundry and Machine Works at Birmingham, Ala., are preparing to add some new machinery.

The Tompkins Machine and Implement Company of Dallas, Texas, made an assignment recently. There are over 100 creditors, mainly Northern manufacturing companies, principally in New York, Pennsylvania, Illinois and Ohio. Liabilities are about \$115,000, the nominal assets \$50,000.

The Gastonia Foundry and Machine Shop Company have been organized at Gastonia, N. C., with a capital stock of \$25,000. The officers of this company are J. B. Beal, president; Miles Hanna, vice-president; and J. R. Spencer, secretary. This company contemplate the early construction of an iron foundry and machine shops.

Bonnot Bros. of Louisville, Ohio, have made a proposition to parties at Big Stone Gap to take \$60,000 worth of stock in a \$100,000 company for the purpose of establishing boiler and engine works at Big Stone Gap.

A branch of C. F. Kane's machine shops at Martins' Ferry, Ohio, has been established at Mannington, W. Va.

The Eagle Iron Works, situated at 812-816 Race street, Philadelphia, were destroyed by fire on the 28th. The loss is about \$20,000, and is covered by insurance.

The Dustin-Hubbard Mfg. Company, at Fort Payne, Ala., will hereafter be known as the Fort Payne Machine Works.

The Brown & Sharpe Mfg. Company are building a new four-story brick building, 100 feet long and 56 feet wide. The construction is similar to that of the main machine shop buildings, and is practically fire-proof throughout. The walls are 20 inches thick and have two ventilating flues 6 x 8 inches in each pier. A large proportion of the wall space is occupied by windows. The floors and roofs rest on iron beams, supported by three transverse rows of iron columns 16 feet apart. The heavier beams are in pairs and are 20 inches deep; the lighter are 15 inches deep. The latter are 8 feet from center to center and support brick arches 4 inches thick, 10 inches rise. The floors are 5 inches thick. The first layer from beam to beam is 2 1/2-inch splined spruce plank. The second layer is 1 1/2-inch spruce, laid diagonally with the plank, and the third, or top layer, is 1 1/2-inch hard pine laid parallel with the 2 1/2-inch plank. The roof is solid concrete, covered with tar and gravel. The stairways are iron. Benches of the Brown & Sharpe standard pattern and their sanitary closets will be used. The building will be devoted to the manufacture of a variety of small tools and instruments for accurate measurements.

The El Paso Foundry and Machine Company, at El Paso, Texas, have a capital stock of \$50,000 and will operate an iron foundry and machine shops.

The G. B. McWayne Flour and Machine Company will move their plant from Graham to Wytheville, Va.

Jas. McKinney & Son, architectural iron workers, Albany, N. Y., have been rushed with casting work for naval engines and gas engines of late. They have recently turned out some handsome iron stairways for the massive Delaware and Hudson Railroad Company building, at the corner of North Pearl and Steuben streets, which is rapidly nearing completion.

Cresswell's Eagle Iron Foundry in Philadelphia was destroyed by fire on Saturday morning. Estimated loss, \$75,000.

The blacksmiths of the Richmond Locomotive Works, at Richmond, Va., have joined the strikers.

A corporation to be known as the Staple Fastening Machine Company, capital stock \$100,000, have been organized at Saco, Maine, for the purpose of doing a general machinery business. The officers are: President, William S. Hamm of Newton, Mass.; treasurer, J. Sidney Snow of Boston.

The Harmon Machine Company of Watertown, N. Y., capital stock \$30,000, have been incorporated.

Curtis & Curtis of Bridgeport, Conn., manufacturers of pipe cutting and threading ma-

chinery, have received their third order for their pipe threading machinery to be placed in the Norfolk navy yard. They also have on hand a number of large foreign orders, which as yet they have been unable to fill.

A public meeting has been called at Chambersburg, Pa., for April 1, for the purpose of re-establishing the Taylor Mfg. Company. The necessary capital for again putting the works in operation and placing the company on a sound basis is placed at \$130,000, and an effort will be made to raise this amount at the meeting.

The Tompkins Machinery and Implement Company of Dallas, Texas, have assigned, with liabilities aggregating \$115,000 and nominal assets of \$500,000.

It is stated that the Martin's Ferry (Ohio) Boiler Company will remove their works to Cameron, W. Va.

The foundry and planing mill of T. F. Stimpson, at Hancock, N. Y., was recently damaged by fire to the extent of \$25,000.

Butler & Martin will erect a foundry 50 x 100 feet at Middletown, N. Y., the removal of the old Orange County foundry to Greenpoint, L. I., having opened a field for an enterprise of this kind.

The Iron Car Equipment Company of Huntingdon, Pa., have mortgaged themselves to the Central Trust Company of New York for \$1,100,000, conditioned for the payment of \$600,000 in the year 1900. The Iron Car Equipment Company are the successors of the Iron Car Company and the Huntingdon Mfg. Company, and the mortgage is given to secure funds for the company to settle the liabilities of the old companies and to place the new company on a solid financial basis.

The Cushing Machine Company, capital stock, \$500,000, have been organized at Portland, Maine.

A new brick foundry, 240 x 75 feet, with monitor roof and having a capacity of over 40 tons per day, has been completed by Pratt & Cady at Hartford, Conn. It is wholly of iron, and a pattern room, casting room and storage sheds have also been built, nearly of equal size.

Hardware.

The Salem Lock Works, Salem, Ohio, will have their works in full operation within a few days, and will then be in a position to fill orders promptly. They will make an entirely new line of Locks under their own patents.

Stevens & Willis, South Braintree, Mass., are making specialties of all kinds of shoe nails, shoe tacks and countersunk headed nails; all for machine driving. They advise us that they have facilities for prompt shipment.

The Huron Grindstone Company, Port Austin, Mich., announce that they have erected extensive grindstone and scythe stone factories at their quarries, which are adjoining and a part of the blue sand stone from which the Lake Huron stones are quarried. May 1 they will be fully prepared to meet all demands and fill the largest orders with dispatch for Lake Huron grindstones of all sizes, mounted grindstones and scythe stones, including the well-known brands, Quinebog, Star, Clear Grit and Western Red End. They state that they have found a rock particularly suitable for the use of cutlery manufacturers.

J. H. Baker, general manager of the Baker Chain and Wagon Iron Mfg. Company of Allegheny City, Pa., since their organization, has resigned his position with that company. The above firm have a large amount of work on hand at present, and are operating their plant to its full capacity, to keep pace with their orders. We understand Mr. Baker is engaged in the formation of a new concern to be known as the Baker Iron Company, who propose to locate in the South. It is the intention of the new concern to engage in the manufacture of bar iron, agricultural iron and steel, car forgings and mining tools.

Gibbs Mfg. Company, Canton, Ohio, advise us that their sales on both lawn rakes and post hole diggers are far in advance of last season, and that from present indications they feel confident that their output of goods will double that of any previous season.

Miscellaneous.

The Rawson & Thacher Mower Works, at Corning, N. Y., started up Monday.

An action against the Eureka Mower Company of Towanda, Pa., has been commenced by the Eureka Mower Company of Utica, N. Y. The action also affects all other persons having or claiming to have an interest in the \$50,000 stock levied on to determine the rights of the parties to the stock, the deputy sheriff having refused to sell the stock until some law

questions are settled by the courts as to the issuing and ownership of the stock. The reasons for taking this course were that it was the only way to protect the innocent parties who might purchase the stock at sheriff's sale and enable the sheriff to give perfect title. The issue may be tried at the May term of the Supreme Court, or may go over to the November Circuit. In the meantime all matters in relation thereto are suspended.

Among recently authorized corporations in Illinois are the following: Willis Mfg. Company, Galesburg, to manufacture sheet-metal work and galvanized iron cornices; capital stock, \$10,000; incorporators, H. F. Willis, Isaac H. Willis and George S. Shumway. Crescent Novelty Company, Chicago, to manufacture household goods and novelties; capital stock, \$25,000; incorporators, Charles H. Wolgemuth, Henry H. Kennedy and Joseph W. Moses. National Malleable Iron Company, Peoria, to manufacture malleable iron, machinery and implements; capital stock, \$100,000; incorporators, Andrew Henry, Albert C. Angier and George A. Wilson. Ordway Heating and Ventilating Company, Chicago, to manufacture and sell heaters and ventilating apparatus; capital stock, \$27,000; incorporators, Ira J. Ordway, J. Murray Maxson and John G. Culver. American Water Supply Company, Chicago, to manufacture, sell, use and operate apparatus for the supply and purification of water; capital stock, \$1,000,000; incorporators, Homer C. Irish, Louis Henry and Jacob Ringer. Excelsior Car Roof Company, East St. Louis, to manufacture and sell roofs and railway supplies; capital stock, \$75,000; incorporators, C. M. Jennings, J. S. Berthold and George S. Hoke. Lewis Steel Sheet and Tin Plate Company, Chicago, to manufacture steel sheets, block sheets and other steel and iron products; capital stock, \$500,000, incorporators, J. Davis Lewis, D. Trevor Lewis and Nathaniel D. Lewis.

The American Brass and Rivet Company of Westfield, Mass., contemplate increasing their facilities soon, as their present facilities are entirely inadequate.

It is reported that the Davis Gun Company of Assonet, Mass., contemplates removing their plant to Taunton, in order to increase their facilities.

Several buildings forming a portion of the plant of the Passaic Zinc Company in Jersey City were destroyed by fire last Sunday afternoon, but the main structure was saved.

Yazoo City, Miss., has awarded to the Michigan Pipe Company of Bay City, Mich., a \$75,000 contract for building a water works, electric light and sewerage system.

At a special meeting of the stockholders of the Pittsburgh Brass Company, held in their office in Allegheny City, Pa., on Wednesday, the 25th ult., it was resolved to increase the capital stock of the concern from \$100,000, its present limit, to \$200,000, and one-half of the increase was immediately subscribed by the present stockholders, leaving only \$50,000 of the new stock yet unsold. The present works of the company are located at Isabella and Sandusky streets, Allegheny, but they have become too small. It is the intention to devote the proceeds of \$50,000 of the new stock to the purchase of another location on which to erect new works of fully double the capacity of the present quarters.

The Farmers' and Merchants' Mfg. Company, with Charles Bugg as president, have been organized at Farmville, Va., to establish a factory for the manufacture of farm implements and other supplies.

It is reported that negotiations have been successfully terminated between citizens of Atlanta, Ga., and F. X. Ohlen and C. C. Chaffee of Columbus, Ohio, looking to the establishing of saw works near Atlanta.

The Emerson Car Company have perfected a final organization at Charleston, S. C., by the election of A. S. Emerson as president and J. W. Smith as secretary. This company will manufacture the Emerson patent ventilators for railroad coaches and cars.

The Harriman Agricultural Works at Harriman, Tenn., formerly the Gibson Agricultural Works, Chattanooga, Tenn., have perfected their organization with David Gibson as president and Alfred Coyer, as secretary. This company have a capital stock of \$50,000, and will manufacture a general line of agricultural implements.

The Queen City Mfg. Company have been organized with a capital stock of \$50,000 at Meriden, Miss., to manufacture agricultural implements and other articles. The incorporators are J. H. Wright, F. Ormond, M. D. Lyle and others.

The Southern Mfg. Company, with a capital stock of \$25,000, have been formed at Fort

Payne, Ala., for the purpose of establishing a factory to manufacture wire screens and doors, and to make the new Porter adjustable screen. This company have purchased a building, and will equip it at once with the necessary machinery.

The King Postal Box Company have been incorporated at Atlanta, Ga., with a capital stock of \$25,000, by H. O. King and others. This company will manufacture the postal box recently patented by H. O. King.

The St. Helena Mining Company have been organized at Sulphur Springs, Ga., by W. H. Shepherd, J. C. Storrs and others, and have acquired control of 500 acres of iron property in that vicinity, and will open iron mines.

The Canton Steel Roofing Company of Canton, Ohio, are making large additions to their factory.

The Franz & Pope Knitting Machine Company of Bucyrus, Ohio, are doing a very large business on their patented knitting machine.

The Worcester Wire Mfg. Company, with a capital stock of \$12,000, have been incorporated at New Port, Ky., by L. H. Wilson, J. M. Raney, W. W. Worcester and others, and will establish a factory for the manufacture of wire goods.

The Patent and Specialty Company, with a capital stock of \$50,000, have been incorporated at Birmingham, Ala., Washington Roosh of Atlanta, Ga.; W. J. Pollard of Augusta, Ga.; B. E. Marable and others, for the purpose of purchasing patents and manufacturing specialties.

A. Y. Dolfield and others are interested in the establishing of a \$30,000 agricultural works at Towson, Md.

Parties are negotiating at Knoxville, Tenn., with a view of establishing a wire fence factory in that place.

The Lexington Mfg. Company, with a capital stock of \$46,000, have been incorporated at Lexington, S. C., with C. M. Efird, president, and W. P. Roof, secretary.

Among the largest incorporated enterprises ever inaugurated in the Southern States has just been formed under the laws of Tennessee. It is known as the Corporate Town Company of Knoxville, Tenn. It has a capital stock of \$10,000,000, and its object is the foundation of a great manufacturing site in the uplands of East Tennessee. The president of this enterprise is Hon. Robt. P. Porter, Superintendent of Census, and ex-Congressman McComas of Maryland, vice-president. The directors are: U. S. Senators John G. Carlisle of Kentucky, Isham G. Harris of Tennessee, H. C. Hembrough of North Dakota, ex-Representative Ben Butterworth of Ohio, Augustin Davis of Chicago, Judge Love and W. P. Cove of Tennessee, T. M. Johnson of Knoxville and B. A. Jenkins, president of the National Bank of Knoxville, Tenn.

PERSONAL.

Edward Reis has recently resigned his position as assistant superintendent of the Alice Furnace, at Birmingham, Ala.

Thomas C. King, who has recently had charge of the two large coke furnaces in Ohio, has recently succeeded Steven Noble as superintendent of the Clifton Iron Company's furnace at Irongate, Ala. Mr. Noble tendered his resignation some time since, and will go into business in Anniston, Ala.

Professor Netto of Frankfort, Germany, well known in connection with his work in developing the manufacture of aluminum, is now traveling in this country.

Dr. R. W. Raymond, secretary of the American Institute of Mining Engineers, has returned from Egypt.

John S. Slagle, general superintendent of the Allegheny Bessemer Works for some time past, owned and controlled by Carnegie Bros. & Co., has withdrawn therefrom, and will hereafter give all his time to the firm of Nimick & Co., of which latter firm he has been a member for many years.

The closing down of the Joliet rod mill of the Illinois Steel Company is reported to be due to some trouble with the Amalgamated Association.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 58 Dearborn street, Chicago, April 1, 1891.

One very depressing factor in the local trade situation has been obliterated. The builders and carpenters have settled their differences and there is now no apprehension of a strike. With this threatened disturbance out of the way a very active building season is assured, which is good news to a very wide circle of industries. The agreement just made is to continue in force for two years from to-day. The usual reduced rates on iron for the summer were put in effect on Monday from eastern points to Chicago. The general condition of business has not improved, buying being still spasmodic.

Pig Iron.—While dealers very generally report an exceedingly dull market, some of them are managing to secure nice orders, showing that there is still a little life in the trade. Among the sales noted the past few days are one of 1000 tons of Southern Gray Forge at \$14.25, and several transactions in Lake Superior Charcoal of 300 to 1000 tons. Besides these sales the demand for local Coke Iron has been somewhat better, although foundrymen continue to complain of slow business in their specialties. A few days since it was supposed that the coke strike had ended and at once consumers began to argue in favor of lower prices, but the reported riot in the Coke region on Monday has put a different phase on the matter and buyers are not now so confident. Some qualities of Coke Iron have latterly become so scarce that shipments of what would ordinarily be sold as Bessemer are being made for foundry purposes. Southern Coke Iron is hardly as firm as it was, which is perhaps owing to the pressure to sell by holders of warrants who, as usual, are most anxious to sell when people are least willing to buy. Standard brands of Lake Superior Charcoal are selling close to our quotations, but concessions are made on new or comparatively unknown Irons. Several large consumers have this week come into the market and asked for prices on round lots for long deliveries. We quote:

Lake Superior Charcoal.....	\$18.00 @ \$18.50
Local Coke Foundry, No. 1.....	15.50 @ 16.00
Local Coke Foundry, No. 2.....	15.00 @ 15.50
Local Coke Foundry, No. 3.....	14.50 @ 15.00
Local Scotch.....	16.00 @ 16.50
Ohio Strong Softeners.....	18.50 @ 19.00
Southern Coke, No. 1.....	16.25 @ 16.75
Southern Coke, No. 2.....	15.75 @ 16.00
Southern Coke, No. 3.....	15.25 @ 15.50
Southern, No. 1, Soft.....	15.75 @ 16.00
Southern, No. 2, Soft.....	14.50 @ 15.50
Southern Gray Forge.....	14.50 @ 14.75
Tennessee Charcoal, No. 1.....	18.50 @
Alabama Car Wheel.....	22.50 @ 23.50
Coke Bessemer.....	17.00 @
Hocking Valley, No. 1.....	18.25 @

Bar Iron.—Some car orders have recently made their appearance, but inquiries from other consumers are very light. Prices are weak, and, while local mills quote 1.70¢, half extras, Chicago, they would gladly book orders at 1.65¢ if they were to be had. Jobbers are bidding less, but have thus far found the manufacturers unwilling to meet their views. Mahoning Valley mills are quoting 1.60¢, at mill, and make lower rates for good specifications. There is evidently no profit in this business, as some of the valley mills are closing down rather than pay the prices now asked for Northern Gray Forge, which they need to mix with Southern. Store prices are 1.85¢ @ 1.90¢, full extras.

Structural Iron.—Several good contracts for structural material were placed since last report, the Newberry Library Building being the largest in this imme-

diate vicinity. Winslow Brothers of this city have, however, secured the contract for the Wainwright Building, a ten-story structure, to be built at St. Louis. Contracts of this character will now be closed rapidly, as there is no longer fear of a strike. Prices are unchanged.

Sheets.—Large orders for Black Sheets are in sight, but buyers are hesitating, being apparently satisfied that prices will not advance, while they may recede a little more. Standard makers quote No. 27 Common 2.80¢ @ 2.85¢, at mill. Galvanized Iron is also neglected, but the mills are not forcing sales at present, being fairly employed on old orders. Jobbers quote 3.30¢ for No. 27 Common, and 65% off for Juniata Galvanized.

Plates.—Dealers report trade a trifle better than it has been, but by no means active. There is no quotable change in prices, but concessions are made as usual, and Tubes are weaker. Nos. 10 to 14 Iron Sheets, 2.75¢ @ 2.80¢; Steel Sheets, 2.90¢ @ 3¢; Tank Iron, 2.55¢ @ 2.65¢; Tank Steel, 2.65¢ @ 2.75¢; Steel Iron or Steel, 3.25¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.25¢ @ 5.5¢; Boiler Rivets, 4¢ @ 4.25¢; Boiler Tubes, 50% off.

Track Supplies.—The sales of Steel Rails the past week aggregated a fair tonnage, but no large contracts were placed. More business is pending. Manufacturers quote \$31 as bottom for largest lots, with the usual advance for smaller quantities. At least one good order for Splice Bars was placed in this market, with perhaps a few smaller ones. Quotations range from \$1.85 @ \$1.95 for Iron, and \$2 @ \$2.05 for Steel. Spikes are dull at \$2 @ \$2.10, while Track Bolts with Hexagon Nuts are unchanged at 2.85¢ @ 2.95¢.

Merchant Steel.—The implement makers have been the heaviest purchasers recently. A number of them have entered additional orders on their season contracts, running up the sales of the week considerably. Open-Hearth Machinery is quoted at 2.30¢ @ 2.65¢, Spring at 2.50¢ @ 2.75¢, Tire at 2.30¢ @ 2.60¢, and Bessemer Bars at 2.20¢ @ 2.30¢.

Old Rails and Wheels.—Old Iron Rails have been sold to a limited extent at \$23.25, delivered to consumers' works. Local consumers are supplied for the present and sales would be hard to make, but the supply is small at the same time, so that there is no great pressure to sell. Old Car-Wheels are quiet, but fairly firm at \$17. Old Steel Rails are dullest of all, and it is hard to make a price on them. It is a question whether \$17 could be obtained for selected, while short pieces would not bring more than \$13.50 @ \$14.

Scrap.—The situation is unchanged from last week, the demand being light and the supply very abundant. Selling prices @ net ton are about as follows: No. 1 Railroad, \$18.50 @ \$18.75; No. 1 Forge, \$18 @ \$18.25; No. 1 Mill, \$13.50 @ \$14; Fish Plates, \$21; Axles, \$24; Pipes and Flues, \$12.50 @ \$13; Horseshoes, \$18; Cast Borings, \$8 @ \$8.50; Wrought Turnings, \$11.50; Axe Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$15; Leaf, \$16; Tires, \$18.

Metals.—Casting brands Copper are now quoted 11.75¢ @ 12¢, in carload lots. Manufacturers' agents here take a very bullish view of the condition of this metal. The demand continues strong, and with one of the largest producers shut down and likely to remain idle for a protracted period, prices already show an upward tendency. Lake is still quoted at 14.25¢, and Spelter at 5¢ @ 5.25¢, in carload lots. Dealers report little change in the position of Lead. Consumers have taken on metal in fair quantities, and in the face of

rather moderate offerings, the hardening tendency in values is noticeable. Producers as a rule are very firm in their ideas, and the Lead for sale at present prices is confined almost entirely to "spot" metal; futures are held higher. Early in the week the 4.15¢ quotation here was firmly established and sales effected of several hundred tons at the price; 4.20¢ asked for April shipment. At St. Louis the market has been strong. Buyers have had to pay 4.10¢ @ 4.15¢ for what "spot" Lead they have bought, sellers refusing to name prices on futures. The closing is firm at 4.15¢.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., Philadelphia, Pa., March 31, 1891.

The first quarter of 1891 has been a most trying time to the Iron trade. Prices have been weak and unsettled, and the demand during the entire period uncertain and hesitating. Yet, considering the financial outlook during November and December, and the fact that the output of Pig Iron, which had reached the highest limit on record, had to be reduced something like 20% within a period of 90 days, it is wonderful how easily this has all been accomplished. There has been no general or widespread disaster, but more or less the entire trade has had to pay the penalty of overproduction, and although the crisis seems to have been passed, there is no immediate promise of any very rapid recovery. Some failures have occurred and some extensions granted, while in other instances—many instances, in fact—credits are scrutinized and restricted and business conducted on more conservative basis than formerly. This has its temporary inconveniences, but the ultimate result will doubtless be an advantage to legitimate business. For the present the trade are inclined to work close in shore. Neither buyers nor sellers care to discount the future to any great extent, so that trading is simply to cover immediate requirements. The aggregate turn over, therefore, while mostly in small lots, is not by any means insignificant, although the week's sales barely equal the week's output, which, of course, leaves sellers almost in a chronic condition of impecuniosity for orders. The turning point will come some day, possibly very soon, but at this writing there is not the slightest indication of change for either better or worse. Hence, as already intimated, the trade are simply hanging on, and will continue to do so until something definite transpires to warrant a change of attitude.

Pig Iron.—Reports are not entirely uniform in regard to the condition of the market. Some well-informed parties aver that Foundry Irons are so closely sold up that the slightest increase in demand would develop serious scarcity, temporarily. On the other hand, consumers appear to be perfectly easy, so much so, in fact, that they are unwilling to bid present prices for deliveries 60 to 90 days later on. What they need for the next 30 days or so they are willing to take at current rates, and as yet there has been no difficulty in placing orders on such conditions. Medium and off grades are not particularly plenty—that is to say, there is no urgency to realize unless at prices fairly in proportion with standard brands. Taking the market all the way through, it would probably be safe to say that it is steady at unchanged prices—the offerings are not large, but for the present are equal to all demands, so that there is nothing upon which to base predictions for either higher or lower prices, although the chances are rather in favor of a continuance of present conditions until the Coke strike is settled. The general opinion is that the men are already defeated

and that a scarcity of fuel is no longer a cause for serious uneasiness. Sales of Pig Iron during the week have been made at about the following prices for lots delivered in consumers' yards:

Ohio Softeners, No. 1x	\$19.00	@	\$19.50
Ohio Softeners, No. 2x	18.00	@	18.50
Standard Penna, No. 1x	17.50	@	18.00
Standard Penna, No. 2x	16.50	@	17.00
Medium Penna, No. 1x	17.25	@	17.50
Medium Penna, No. 2x	16.00	@	16.25
Virginia, No. 1x	16.75	@	17.50
Virginia, No. 2x	15.75	@	16.00
Standard Neutral All-Ore Forge	14.75	@	15.25
Ordinary Forge Cinder mixed	14.00	@	14.25
Charcoal Car-Wheel Iron	21.00	@	25.00

Bessemer Pig.—The market is still practically in a state of abeyance, although consumers are beginning to inquire around with a view of renewing contracts which will soon be completed. Sellers are not disposed to shade quotations until they see that buyers are ready to take hold, although they are anxious for business. Nominal prices are about \$17.50 at furnace for standard and \$19 @ \$19.50 for special qualities.

Ferromanganese.—Nothing doing in foreign, which is quoted at about \$62, duty paid for 80 %. A sale of 1000 tons of domestic was made a few days ago, supposed to be somewhere about \$60, delivered for 80 %.

Steel Billets.—Business is still slow, and at irregular prices, as there is no general demand at the moment. One lot of 600 tons Soft Steel was placed at a fraction over \$28, delivered to a mill near by, and although some quote \$28.50 @ \$29, bids at \$28 are not easily obtained for good-sized lots. Consumers find such an unsatisfactory demand for their products that they will make no bids except for material that they cannot do without.

Steel Rails.—There is an improved feeling in this department, and although large orders are still held in abeyance there is an increasing demand for small lots. One order for 15,000 tons for the New York Central was placed with the Bethlehem Company at \$30, and other mills are gradually filling up on similar terms.

Muck Bars.—Market quiet, and prices just a trifle irregular. If any one wants good Bars and must have them, probably \$27 would be the price delivered, while on the other hand a needy seller would not get more than \$26.50. The market is in just that condition that price would depend upon which side was most anxious to make the trade.

Bar Iron.—It is impossible to write anything encouraging under this heading. Orders are anxiously sought for, and to secure them prices have been cut to probably the lowest on record. One swallow does not make a summer, however, neither can one or two impecunious mill owners make a price for the entire trade, but it is a fact, nevertheless, that parties with cash in hand for good sized lots are virtually able to name their own figures. Ordinarily 1.75¢ @ 1.85¢ is quoted by mills that have a reputation for first-class Irons; but, as we said before, there are others who go much below that for the kind of orders that they happen to be looking for.

Skelp Iron.—There is no business of any importance at present. Manufacturers quote 1.75¢, delivered, for Grooved, and 1.85¢ @ 1.90¢ for Sheared, but only small lots are called for at present.

Plates.—There is some business doing in Plates all the time, not enough to keep mills busy, nor enough to keep prices steady, but in the aggregate there is a fairly large consumption. Shipbuilding has fallen off considerably, and bridge building is not what it was a year ago; but for boiler work and for general consumption there is a very fair demand. Still, the mills find it hard work to run

more than one-half to two-thirds of their capacity, and to secure even that much prices have to be shaved to the lowest possible fraction. It is impossible to give exact quotations, but the usual asking prices for lots delivered in consumers' yards are about as named below. Steel is supposed to command the difference named in our quotations, but in not a few instances buyers have been given the choice of Iron or Steel at equal prices.

	Iron.	Steel.
Ship Plates	2.00 @ 2.10¢	2.05 @ 2.10¢
Tank	2.00 @ 2.10¢	2.05 @ 2.10¢
Bridge Plate	2.05 @ 2.15¢	2.15 @ 2.20¢
Shell	2.20 @ 2.30¢	2.30 @ 2.40¢
Flange	3.10 @ 3.20¢	2.50 @ 2.60¢
Fire-Box	3.75¢	3.25 @ 3.75¢

Structural Material.—The demand is slow, and many of the leading mills are less crowded with work than they have been for a year past. The immediate outlook does not indicate much improvement, although with open weather the trade hope for a better demand. Prices unsettled, but usually quoted about as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Demand for Heavy Sheets is fairly good, but Thin Sheets are extremely dull, although mills are mostly running full without piling up much stock. Prices are inclined to droop, but for the best makes quotations are about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @	.....
Best Refined, Nos. 21 to 24	3.10¢ @	.....
Best Refined, Nos. 25 to 26	3.30¢ @	.....
Best Refined, No. 27	3.40¢ @	.....
Best Refined, No. 28	3.50¢ @	.....
Common, 1/4¢ less than the above		
Best Soft Steel, Nos. 14 to 20	3¢ @ 3 1/4¢	
Best Soft Steel, Nos. 21 to 24	3 1/4¢ @ 3 3/4¢	
Best Soft Steel, Nos. 25 to 26	3 3/4¢ @ 3 7/8¢	
Best Soft Steel, Nos. 27 to 28	4¢ @ 4 1/4¢	
Best Bloom Sheets	1/4¢ extra over the above	
Best Bloom, Galvanized, discount	..... @ 65%	
Common, discount	..... @ 67 1/2%	

Old Rails.—No demand whatever. Nominal prices are from \$22.50 to \$23 for Iron and \$17.50 to \$18 for Steel, but buyers are few and far between, so that quotations are more or less nominal.

Scrap Iron.—Good Scrap meets with a fair demand, but sales cannot be forced unless at some sacrifice in prices. The usual asking prices are about as follows: No. 1 Railroad Scrap, \$22 @ \$23, Philadelphia, or for deliveries at mills in the interior, \$22.50 @ 23, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18 for Old Car Wheels.

Wrought-Iron Pipe.—There is a fair demand from the smaller class of consumers, but prices are terribly demoralized, cuts of 10 % and upward having been made for what are considered desirable orders. An adjourned meeting of manufacturers is to be held in Pittsburgh on Thursday, when it is expected that the combination will be strengthened or entirely disbanded. The feeling is not one of hopefulness by any means, and some well informed parties consider disruption almost inevitable. Discounts are nominally as follows:

Butt-Welded Black	47 1/2 %
Butt-Welded Galvanized	40 %
Lap-Welded Black	60 %
Lap-Welded Galvanized	47 1/2 %
Boiler Tubes	50 %

The Bar Iron trade will doubtless be glad to hear that Harry F. Hall, son-in-law of the late Stephen Robbins, and for many years actively connected with that

business, has associated himself with the Statington Rolling Mill Company and will be in full charge of the mercantile and financial department of that company. This recently established concern is admirably equipped and located, and under the management of W. P. Hopkins in the mill and Mr. Hall in the office the business ought to be a success.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, March 30, 1891.

Pig Iron.—The condition of the market is not perceptibly removed from what it was in the last report. Consumption has not revived to that degree that had been expected, and trade seems rather inclined to be dull. Prices are hardly holding their own in the general market, but sales are about up to the average production. There appears to be a sort of timidity among buyers, but nevertheless furnaces are maintaining quite a firm position in regard to sales. As a general thing sales are being made in smaller quantities than they were a couple of weeks ago, which evidently shows a more conservative disposition on the part of buyers. \$12.50 @ \$13 appears to be about the ruling price for best Foundry grades, in large round lots, on a basis of 60 days.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, March 30, 1891.

Pig Iron.—The only feature of importance there is to note in this department since our last report is the virtual termination of the Coke strike. As this report is being written our advices are that the strike is practically over, and while there is more or less rioting among the strikers and those who have returned to work, the assertion can be made that the strike is at an end. With the termination of the strike comes the question of the future course of the market. Consumers have shown a strong disposition to buy only in moderate quantities, and their stand on this question seems to be fixed. They evince no anxiety regarding the immediate future, and are confident that they will have no difficulty in filling their requirements at present prices when they are ready to enter the market. Consumers have had plenty of Iron offered them during the past week, and, with the possible exception of No. 1 Foundry, there seems to be more than sufficient to meet the demand. There is not much new business in the market, and the inquiries from old customers do not indicate a very lively demand, at least not at present. There is some improvement in the demand for railroads, and car-wheel manufacturers are looking about for supplies of Iron, although only in a limited manner. The local demand has only been fair, and with the exception of a few sales of warrant Iron at cut prices the market has been featureless. We quote as follows for cash, f.o.b. St. Louis :

Southern Coke, No. 1 Foundry	\$16.00 @ \$16.25
Southern Coke, No. 2 Foundry	15.00 @ 15.25
Southern Coke, No. 3 Foundry	14.50 @ 14.75
Grav Forge	14.00 @ 14.25
Southern Charcoal, No. 1 Foundry	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	18.00 @ 19.00

Bar Iron.—Trade is light in this department, and mills are skirmishing for work to keep them employed until the railroads can be heard from. The demand from this source has been light, but at the

moment shows some improvement. The outlook is not brilliant, but is likely to improve with the advent of spring. We quote as follows: Lots from mill, 1.65¢, East St. Louis. Jobbers quote 1.75¢ @ 1.80¢ for lots from store.

Barb Wire.—The present condition of trade is fairly satisfactory, both as regards volume of trade and prices. The opening up of the country by reason of the improving weather has stimulated the demand, and from now on mills anticipate a steady trade. Prices are fairly well maintained, although occasionally a jobber with a stock of wire bought before the advance will sell at less than current rates. On the whole, the prices as quoted herewith are generally adhered to. They are as follows: Painted from mill, 2.95¢; Galvanized, 3.50¢; carload lots, 10¢ $\frac{1}{2}$ cwt. less than above prices.

Detroit.

WILLIAM F. JARVIS & CO., Detroit, Mich., under date March 30, 1891, say: While the general business seems to be on a very satisfactory basis, the Pig Iron trade generally is a decided exception to this rule. There seems to be a little brighter outlook, however, as the railroads are buying some considerable quantities of material—that is, in the way of general equipment—and the continuance of the Coke strike has relieved the market of a large burden of Pig Iron and reduced the surplus, so that the market as soon as the demand shall become more active, as it certainly will, will be on a much better basis. In our local market, however, very few transactions of any magnitude can be noted, except two, for round lots of Northern-made Coke Irons, delivery subject to continuance of Coke strike. We are officially informed, however, that this strike is nearly, if not quite, over, as some of the works propose starting during the present week, and it is thought that the strikers will gradually fall into line on some slight concessions being granted them, and that the price of Coke will be a trifle less than at the commencement of the strike. Lake Superior Charcoal Iron does not change in price, but there have been large dealings in the central and eastern part of the country, contracts having been made for summer delivery via lake at present figures. We learn that it is expected that no less than five or six furnaces in this region will blow out unless a material improvement is seen in the market. This will tend to relieve the balance of the furnaces, and we think that prices may be better later in the season. We repeat all quotations last week, as follows:

Lake Superior Charcoal, all numbers	18.50 @ 19.00
Lake Superior Coke, Bessemer	18.00 @ 18.50
Katabdin (Maine Charcoal)	23.00 @ 24.00
Lake Superior Coke Foundry, all ore	18.00 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Southern No. 1	16.25 @ 16.75
Southern Gray Forge	14.75 @ 15.25
Jackson County (Ohio) Silver	18.25 @ 18.75

Cleveland.

CLEVELAND, March 30, 1891.

Iron Ore.—No additional sales are reported and the market seems wholly devoid of new features. Furnacemen in the East are again writing for prices, but only guesses can be made by the local dealers. As heretofore, everything is hinging upon the outcome of the trouble in the Mahoning and Shenango valleys, where the furnaces have so long been idle. The navigation season will not open for several weeks to come, a fact that accounts for the little that has thus far been done regarding transportation rates. It would not be surprising if the Escanaba rate was fixed as low as 80¢ $\frac{1}{2}$ ton, although 85¢ and 90¢ are talked of. It is also probable that a

very good Bessemer Ore will be sold for about \$4.50, f.o.b. vessels lower lake ports when the market actually opens.

Pig Iron.—Two or three dealers announce that they are holding small lots of Bessemer for \$17, and that they would expect the same amount for No. 1 Foundry, all ore. The market, however, is exceedingly dull, only a few scattering sales having occurred since our last report, and the amounts involved being trifling. Dealers are awaiting with some interest the final result of the visit paid by the Mahoning Valley furnacemen to the officers of the Pennsylvania Company at New York, in an effort, it is said, to secure a \$1 $\frac{1}{2}$ ton rate for transporting Coke from Connellsville to the mines. Although it is said that the trip was not wholly successful, many dealers express the belief that with the termination of the Coke strike will come the rate of transportation asked for. In any event, they do not expect to pay over \$1.10 for carrying home the Coke which they are attempting to buy at \$1.50 at the ovens. Several Cleveland dealers are interested in the sales of Forge Irons reported at Wheeling.

Manufactured Iron.—The market is not very strong, but quite a number of sales of Common Bar at 1.65¢. Steels are selling quite freely at the basis of about 2.85¢ @ 2.90¢ for No. 27.

Scrap.—The market shows considerable life, but there are no changes in values, No. 1 Railroad Wrought bringing from \$20 to \$21.50 $\frac{1}{2}$ ton and old Car Wheels \$17.

Old Rails.—About \$24 $\frac{1}{2}$ ton is paid for Old American when any sales are made, which is not often.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, April 1, 1891.

Practically in every single department of the local Iron trade the complaint of sellers is that business is duller than it has been for years past. Only a few take a very hopeful view of the immediate future, even the most sanguine naming the late summer or early fall as the period when the inevitable rush of orders is to come. Confidence cannot be restored in a day or in a month, and it will only be after a rising tendency in securities has been established that the general public will take hold of the thousand and one enterprises which must be under way to keep our Iron and Steel consumption up to its normal height.

American Pig.—The majority of sellers report a very dull market. Founders will take only what they absolutely need for early wants, and when that is covered do not take the slightest interest in any further offerings. They seem generally convinced that the future can bring them only advantages. Some sellers stubbornly adhere to what they hold to be bottom prices. The extreme range on Northern brands is \$17 @ \$18 for No. 1, \$16 @ \$16.75 for No. 2 and \$14 @ \$15 for Gray Forge. Southern sells at \$16.25 @ \$17.50 for No. 1 Foundry, \$15.50 @ \$16 for No. 2 and \$14 @ \$15 for No. 3, according to brand.

Ferromanganese.—The market is dull so far as foreign Ferro. is concerned, holders asking \$64 @ \$64.50, with cost of importation on a cash basis a shade over \$63. American Ferromanganese has not only secured the interior markets, but is also coming further East than ever before.

Billets and Rods.—Very little has been done in domestic material in this market, but we note sales of foreign Basic Rods for re-export at \$43 and of foreign Basic Billets at \$31.75 @ \$32.

Steel Rails.—The market is exceedingly flat, the only sales of any magnitude made by Eastern mills being one lot of 3000 tons for a Georgia road and one lot of 13,000 of 75-pound for the Mohawk and Northern. The latter is of particular interest because there is included in the order an experimental lot which is to come up to the unusual specification of 0.60 carbon and 0.06 phosphorus, \$2 extra being paid therefor. The Vanderbilt roads have usually been partial to a somewhat harder Rail than the majority of railroad men prefer, but in this case they are going even further in the direction indicated. At one time the majority of railroad men specified 0.35 carbon as the maximum. In the market buyers are holding off, and some occupy a position of some hostility to the Rail interest. They have evidently been sharply disappointed that the prospect of \$26 and \$27 Rails was not realized. Such a feeling has some bearing on the market, since it will give support to a policy of purchasing only from hand to mouth. We quote \$30.75 @ \$31 at tide-water.

Manufactured Iron and Steel.—The local architectural demand keeps up quite well, and the outlook is promising, thus giving a moderate amount of business to local mills and merchants. But prices are low and competition is keen. From Boston come complaints of inability to meet the competition of Foreign Beams, which are selling there at 2.6¢ @ 2.7¢ for German. Only one lot of 500 tons of German Beams has thus far sold in this market. The local store trade in Bars is reported to be very light and unsatisfactory. Plates continue weak, Iron Tank having sold as low as 1.85¢ at Eastern mill. Western makers have recently reduced their quotations of Steel Plates $\frac{1}{2}$ ¢, but are still above the market here. We quote Angles, 2¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.25¢; Tees, 2.5¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2.05¢ @ 2.15¢ for Tank, 2.35¢ @ 2.6¢ for Shell, and 2.6¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Rail Fastenings.—We quote \$1.90 @ \$1.95 for Spikes, 1.70¢ @ 1.80¢ for Angles and 2.65¢ @ 2.75¢ for Bolts.

Warrant Stocks.—The American Pig-Iron Storage Warrant Company report as follows:

	Tons
Stock in yard, March 1, 1891	60,000
Put in yard for 31 days ending March 31, 1891	1,600
Total	61,600
Withdrawn 31 days ending March 31, 1891	6,000
Net stock in yard, March 31, 1891	55,000

Ennis & Co. of 62 New street, importers of iron ores and manganiferous ores announce their intention to remove their business to 420 Walnut street, Philadelphia.

Louisville.

LOUISVILLE, KY., March 30, 1891.

Friday, 27th, was just one year from the visitation and destruction of the great cyclone which passed over Louisville, Ky. A large mass meeting was held in one of the churches, and memorial services conducted, after which reports were rendered by the committees of citizens to whom had been intrusted the distribution of moneys subscribed. Passing over the course of the cyclone now, no one can realize what terrible destruction was caused, and how, in so short a time, the waste places could be rebuilt so complete. In many places much handsomer buildings have gone up than the old ones destroyed.

and that a scarcity of fuel is no longer a cause for serious uneasiness. Sales of Pig Iron during the week have been made at about the following prices for lots delivered in consumers' yards:

Ohio Softeners, No. 1x	\$19.00	@ \$19.50
Ohio Softeners, No. 2x	18.00	@ 18.00
Standard Penna, No. 1x	17.50	@ 18.00
Standard Penna, No. 2x	16.50	@ 17.00
Medium Penna, No. 1x	17.25	@ 17.50
Medium Penna, No. 2x	16.00	@ 16.25
Virginia, No. 1x	16.75	@ 17.50
Virginia, No. 2x	15.75	@ 16.00
Standard Neutral All-Ore Forge	14.75	@ 15.25
Ordinary Forge Cinder mixed	14.00	@ 14.25
Charcoal Car-Wheel Iron	21.00	@ 25.00

Bessemer Pig.—The market is still practically in a state of abeyance, although consumers are beginning to inquire around with a view of renewing contracts which will soon be completed. Sellers are not disposed to shade quotations until they see that buyers are ready to take hold, although they are anxious for business. Nominal prices are about \$17.50 at furnace for standard and \$19 @ \$19.50 for special qualities.

Ferromanganese.—Nothing doing in foreign, which is quoted at about \$62, duty paid for 80 %. A sale of 1000 tons of domestic was made a few days ago, supposed to be somewhere about \$60, delivered for 80 %.

Steel Billets.—Business is still slow, and at irregular prices, as there is no general demand at the moment. One lot of 600 tons Soft Steel was placed at a fraction over \$28, delivered to a mill near by, and although some quote \$28.50 @ \$29, bids at \$28 are not easily obtained for good-sized lots. Consumers find such an unsatisfactory demand for their products that they will make no bids except for material that they cannot do without.

Steel Rails.—There is an improved feeling in this department, and although large orders are still held in abeyance there is an increasing demand for small lots. One order for 15,000 tons for the New York Central was placed with the Bethlehem Company at \$30, and other mills are gradually filling up on similar terms.

Muck Bars.—Market quiet, and prices just a trifle irregular. If any one wants good Bars and must have them, probably \$27 would be the price delivered, while on the other hand a needy seller would not get more than \$26.50. The market is in just that condition that price would depend upon which side was most anxious to make the trade.

Bar Iron.—It is impossible to write anything encouraging under this heading. Orders are anxiously sought for, and to secure them prices have been cut to probably the lowest on record. One swallow does not make a summer, however, neither can one or two impecunious mill owners make a price for the entire trade, but it is a fact, nevertheless, that parties with cash in hand for good sized lots are virtually able to name their own figures. Ordinarily 1.75¢ @ 1.85¢ is quoted by mills that have a reputation for first-class Irons; but, as we said before, there are others who go much below that for the kind of orders that they happen to be looking for.

Skelp Iron.—There is no business of any importance at present. Manufacturers quote 1.75¢, delivered, for Grooved, and 1.85¢ @ 1.90¢ for Sheared, but only small lots are called for at present.

Plates.—There is some business doing in Plates all the time, not enough to keep mills busy, nor enough to keep prices steady, but in the aggregate there is a fairly large consumption. Shipbuilding has fallen off considerably, and bridge building is not what it was a year ago; but for boiler work and for general consumption there is a very fair demand. Still, the mills find it hard work to run

more than one-half to two-thirds of their capacity, and to secure even that much prices have to be shaved to the lowest possible fraction. It is impossible to give exact quotations, but the usual asking prices for lots delivered in consumers' yards are about as named below. Steel is supposed to command the difference named in our quotations, but in not a few instances buyers have been given the choice of Iron or Steel at equal prices.

	Iron.	Steel.
Ship Plates	2.00 @ 2.10¢	2.05 @ 2.10¢
Tank	2.00 @ 2.10¢	2.05 @ 2.10¢
Bridge Plate	2.05 @ 2.15¢	2.15 @ 2.20¢
Shell	2.20 @ 2.30¢	2.30 @ 2.40¢
Flange	3.10 @ 3.20¢	2.50 @ 2.60¢
Fire-Box	3.75¢	3.25 @ 3.75¢

Structural Material.—The demand is slow, and many of the leading mills are less crowded with work than they have been for a year past. The immediate outlook does not indicate much improvement, although with open weather the trade hope for a better demand. Prices unsettled, but usually quoted about as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements; Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Demand for Heavy Sheets is fairly good, but Thin Sheets are extremely dull, although mills are mostly running full without piling up much stock. Prices are inclined to droop, but for the best makes quotations are about as follows:

Best Refined, Nos. 14 to 20	3.00¢ @	.....
Best Refined, Nos. 21 to 24	3.10¢ @	.....
Best Refined, Nos. 25 to 26	3.30¢ @	.....
Best Refined, No. 27	3.40¢ @	.....
Best Refined, No. 28	3.50¢ @	.....
Common, $\frac{1}{2}$ ¢ less than the above		
Best Soft Steel, Nos. 14 to 20	3¢ @ 3.1¢	
Best Soft Steel, Nos. 21 to 24	3.1¢ @ 3.2¢	
Best Soft Steel, Nos. 25 to 26	3.2¢ @ 3.3¢	
Best Soft Steel, Nos. 27 to 28	3.4¢ @ 3.5¢	
Best Bloom Sheets	$\frac{1}{2}$ ¢ extra over the above prices	
Best Bloom, Galvanized, discount	..... @ 65%	
Common, discount	..... @ 67½%	

Old Rails.—No demand whatever. Nominal prices are from \$22.50 to \$23 for Iron and \$17.50 to \$18 for Steel, but buyers are few and far between, so that quotations are more or less nominal.

Scrap Iron.—Good Scrap meets with a fair demand, but sales cannot be forced unless at some sacrifice in prices. The usual asking prices are about as follows: No. 1 Railroad Scrap, \$22 @ \$23, Philadelphia, or for deliveries at mills in the interior, \$22.50 @ 23, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18 for Old Car Wheels.

Wrought-Iron Pipe.—There is a fair demand from the smaller class of consumers, but prices are terribly demoralized, cuts of 10 % and upward having been made for what are considered desirable orders. An adjourned meeting of manufacturers is to be held in Pittsburgh on Thursday, when it is expected that the combination will be strengthened or entirely disbanded. The feeling is not one of hopefulness by any means, and some well informed parties consider disruption almost inevitable. Discounts are nominally as follows:

Butt-Welded Black	47½ %
Butt-Welded Galvanized	40 %
Lap-Welded Black	60 %
Lap-Welded Galvanized	47½ %
Boiler Tubes	50 %

The Bar Iron trade will doubtless be glad to hear that Harry F. Hall, son-in-law of the late Stephen Robbins, and for many years actively connected with that

business, has associated himself with the Statington Rolling Mill Company and will be in full charge of the mercantile and financial department of that company. This recently established concern is admirably equipped and located, and under the management of W. P. Hopkins in the mill and Mr. Hall in the office the business ought to be a success.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, March 30, 1891.

Pig Iron.—The condition of the market is not perceptibly removed from what it was in the last report. Consumption has not revived to that degree that had been expected, and trade seems rather inclined to be dull. Prices are hardly holding their own in the general market, but sales are about up to the average production. There appears to be a sort of timidity among buyers, but nevertheless furnaces are maintaining quite a firm position in regard to sales. As a general thing sales are being made in smaller quantities than they were a couple of weeks ago, which evidently shows a more conservative disposition on the part of buyers. \$12.50 @ \$13 appears to be about the ruling price for best Foundry grades, in large round lots, on a basis of 60 days.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth St.,
St. Louis, March 30, 1891.

Pig Iron.—The only feature of importance there is to note in this department since our last report is the virtual termination of the Coke strike. As this report is being written our advices are that the strike is practically over, and while there is more or less rioting among the strikers and those who have returned to work, the assertion can be made that the strike is at an end. With the termination of the strike comes the question of the future course of the market. Consumers have shown a strong disposition to buy only in moderate quantities, and their stand on this question seems to be fixed. They evince no anxiety regarding the immediate future, and are confident that they will have no difficulty in filling their requirements at present prices when they are ready to enter the market. Consumers have had plenty of Iron offered them during the past week, and, with the possible exception of No. 1 Foundry, there seems to be more than sufficient to meet the demand. There is not much new business in the market, and the inquiries from old customers do not indicate a very lively demand, at least not at present. There is some improvement in the demand for railroads, and car-wheel manufacturers are looking about for supplies of Iron, although only in a limited manner. The local demand has only been fair, and with the exception of a few sales of warrant Iron at cut prices the market has been featureless. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry	\$16.00 @ \$16.25
Southern Coke, No. 2 Foundry	15.00 @ 15.25
Southern Coke, No. 3 Foundry	14.50 @ 14.75
Gray Forge	14.00 @ 14.25
Southern Charcoal, No. 1 Foundry	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	18.00 @ 19.00

Bar Iron.—Trade is light in this department, and mills are skirmishing for work to keep them employed until the railroads can be heard from. The demand from this source has been light, but at the

moment shows some improvement. The outlook is not brilliant, but is likely to improve with the advent of spring. We quote as follows: Lots from mill, 1.65¢, East St. Louis. Jobbers quote 1.75¢ @ 1.80¢ for lots from store.

Barb Wire.—The present condition of trade is fairly satisfactory, both as regards volume of trade and prices. The opening up of the country by reason of the improving weather has stimulated the demand, and from now on mills anticipate a steady trade. Prices are fairly well maintained, although occasionally a jobber with a stock of wire bought before the advance will sell at less than current rates. On the whole, the prices as quoted herewith are generally adhered to. They are as follows: Painted from mill, 2.95¢; Galvanized, 3.50¢; carload lots, 10¢ $\frac{1}{2}$ cwt. less than above prices.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date March 30, 1891, say: While the general business seems to be on a very satisfactory basis, the Pig Iron trade generally is a decided exception to this rule. There seems to be a little brighter outlook, however, as the railroads are buying some considerable quantities of material—that is, in the way of general equipment—and the continuance of the Coke strike has relieved the market of a large burden of Pig Iron and reduced the surplus, so that the market as soon as the demand shall become more active, as it certainly will, will be on a much better basis. In our local market, however, very few transactions of any magnitude can be noted, except two, for round lots of Northern-made Coke Irons, delivery subject to continuance of Coke strike. We are officially informed, however, that this strike is nearly, if not quite, over, as some of the works propose starting during the present week, and it is thought that the strikers will gradually fall into line on some slight concessions being granted them, and that the price of Coke will be a trifle less than at the commencement of the strike. Lake Superior Charcoal Iron does not change in price, but there have been large dealings in the central and eastern part of the country, contracts having been made for summer delivery via lake at present figures. We learn that it is expected that no less than five or six furnaces in this region will blow out unless a material improvement is seen in the market. This will tend to relieve the balance of the furnaces, and we think that prices may be better later in the season. We repeat all quotations last week, as follows:

Lake Superior Charcoal, all numbers	\$18.50 @ \$19.00
Lake Superior Coke, Bessemer	18.00 @ 18.50
Katahdin (Maine Charcoal)	23.00 @ 24.00
Lake Superior Coke Foundry, all ore	18.00 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Southern No. 1	16.25 @ 16.75
Southern Gray Forge	14.75 @ 15.25
Jackson County (Ohio) Silver	18.25 @ 18.75

Cleveland.

CLEVELAND, March 30, 1891.

Iron Ore.—No additional sales are reported and the market seems wholly devoid of new features. Furnacemen in the East are again writing for prices, but only guesses can be made by the local dealers. As heretofore, everything is hinging upon the outcome of the trouble in the Mahoning and Shenango valleys, where the furnaces have so long been idle. The navigation season will not open for several weeks to come, a fact that accounts for the little that has thus far been done regarding transportation rates. It would not be surprising if the Escanaba rate was fixed as low as 80¢ $\frac{1}{2}$ ton, although 85¢ and 90¢ are talked of. It is also probable that a

very good Bessemer Ore will be sold for about \$4.50, f.o.b. vessels lower lake ports when the market actually opens.

Pig Iron.—Two or three dealers announce that they are holding small lots of Bessemer for \$17, and that they would expect the same amount for No. 1 Foundry, all ore. The market, however, is exceedingly dull, only a few scattering sales having occurred since our last report, and the amounts involved being trifling. Dealers are awaiting with some interest the final result of the visit paid by the Mahoning Valley furnacemen to the officers of the Pennsylvania Company at New York, in an effort, it is said, to secure a \$1 $\frac{1}{2}$ ton rate for transporting Coke from Connellsville to the mines. Although it is said that the trip was not wholly successful, many dealers express the belief that with the termination of the Coke strike will come the rate of transportation asked for. In any event, they do not expect to pay over \$1.10 for carrying home the Coke which they are attempting to buy at \$1.50 at the ovens. Several Cleveland dealers are interested in the sales of Forge Irons reported at Wheeling.

Manufactured Iron.—The market is not very strong, but quite a number of sales of Common Bar at 1.65¢. Steels are selling quite freely at the basis of about 2.85¢ @ 2.90¢ for No. 27.

Serap.—The market shows considerable life, but there are no changes in values, No. 1 Railroad Wrought bringing from \$20 to \$21.50 $\frac{1}{2}$ ton and old Car Wheels \$17.

Old Rails.—About \$24 $\frac{1}{2}$ ton is paid for Old American when any sales are made, which is not often.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, April 1, 1891.

Practically in every single department of the local Iron trade the complaint of sellers is that business is duller than it has been for years past. Only a few take a very hopeful view of the immediate future, even the most sanguine naming the late summer or early fall as the period when the inevitable rush of orders is to come. Confidence cannot be restored in a day or in a month, and it will only be after a rising tendency in securities has been established that the general public will take hold of the thousand and one enterprises which must be under way to keep our Iron and Steel consumption up to its normal height.

American Pig.—The majority of sellers report a very dull market. Founders will take only what they absolutely need for early wants, and when that is covered do not take the slightest interest in any further offerings. They seem generally convinced that the future can bring them only advantages. Some sellers stubbornly adhere to what they hold to be bottom prices. The extreme range on Northern brands is \$17 @ \$18 for No. 1, \$16 @ \$16.75 for No. 2 and \$14 @ \$15 for Gray Forge. Southern sells at \$16.25 @ \$17.50 for No. 1 Foundry, \$15.50 @ \$16 for No. 2 and \$14 @ \$15 for No. 3, according to brand.

Ferromanganese.—The market is dull so far as foreign Ferro. is concerned, holders asking \$64 @ \$64.50, with cost of importation on a cash basis a shade over \$63. American Ferromanganese has not only secured the interior markets, but is also coming further East than ever before.

Billets and Rods.—Very little has been done in domestic material in this market, but we note sales of foreign Basic Rods for re-export at \$43 and of foreign Basic Billets at \$31.75 @ \$32.

Steel Rails.—The market is exceedingly flat, the only sales of any magnitude made by Eastern mills being one lot of 3000 tons for a Georgia road and one lot of 13,000 of 75-pound for the Mohawk and Northern. The latter is of particular interest because there is included in the order an experimental lot which is to come up to the unusual specification of 0.60 carbon and 0.06 phosphorus, \$2 extra being paid therefor. The Vanderbilt roads have usually been partial to a somewhat harder Rail than the majority of railroad men prefer, but in this case they are going even further in the direction indicated. At one time the majority of railroad men specified 0.35 carbon as the maximum. In the market buyers are holding off, and some occupy a position of some hostility to the Rail interest. They have evidently been sharply disappointed that the prospect of \$26 and \$27 Rails was not realized. Such a feeling has some bearing on the market, since it will give support to a policy of purchasing only from hand to mouth. We quote \$30.75 @ \$31 at tide-water.

Manufactured Iron and Steel.—The local architectural demand keeps up quite well, and the outlook is promising, thus giving a moderate amount of business to local mills and merchants. But prices are low and competition is keen. From Boston come complaints of inability to meet the competition of Foreign Beams, which are selling there at 2.6¢ @ 2.7¢ for German. Only one lot of 500 tons of German Beams has thus far sold in this market. The local store trade in Bars is reported to be very light and unsatisfactory. Plates continue weak, Iron Tank having sold as low as 1.85¢ at Eastern mill. Western makers have recently reduced their quotations of Steel Plates $\frac{1}{2}$ ¢, but are still above the market here. We quote Angles, 2¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.25¢; Tees, 2.5¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2.05¢ @ 2.15¢ for Tank, 2.35¢ @ 2.6¢ for Shell, and 2.6¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Rail Fastenings.—We quote \$1.90 @ \$1.95 for Spikes, 1.70¢ @ 1.80¢ for Angles and 2.65¢ @ 2.75¢ for Bolts.

Warrant Stocks.—The American Pig-Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard, March 1, 1891	60,000
Put in yard for 31 days ending March 31, 1891	1,600
Total	61,600
Withdrawn 31 days ending March 31, 1891	6,600
Net stock in yard, March 31, 1891	55,000

Ennis & Co. of 62 New street, importers of iron ores and manganiferous ores announce their intention to remove their business to 420 Walnut street, Philadelphia.

Louisville.

LOUISVILLE, KY., March 30, 1891.

Friday, 27th, was just one year from the visitation and destruction of the great cyclone which passed over Louisville, Ky. A large mass meeting was held in one of the churches, and memorial services conducted, after which reports were rendered by the committees of citizens to whom had been intrusted the distribution of moneys subscribed. Passing over the course of the cyclone now, no one can realize what terrible destruction was caused, and how, in so short a time, the waste places could be rebuilt so complete. In many places much handsomer buildings have gone up than the old ones destroyed.

Conspicuous among these is the new Union depot of the Chesapeake and Ohio Railroad. A magnificent building and shed has just been completed, which will accommodate about ten trains at a time.

Financial.

Trade circles have been quiet, outside of an excited speculation in grain, which was favored by easy money, and wheat and corn were both advanced in price. East and West considerable sales were made, apparently under a belief that the moment was opportune to unload. The Illinois crop bulletin says wheat conditions are splendid, and in North Dakota the seeding prospect is the best for ten years. Perhaps the most important event of the week is the closing of negotiations giving promise of an early direct entry into New York of the Canadian Pacific Railway, this being one result of harmonizing interests so far as concerns the New York Central, so that both corporations may profit from the recent acquisition by the latter of the Rome, Watertown and Ogdensburg. President Depew believes that the deal will be a great benefit to both the Canadian Pacific and the Vanderbilt systems. Mr. Van Horne, he says, has got what he wanted and the Vanderbilts have secured much of the business of an important road. The Canadian Pacific will cross the St. Lawrence of Brockville, and freight cars will probably soon be transported across the river on flat boats. Indirectly other roads will be benefited, as the Canadian Pacific will come into the American system and virtually under the Interstate Commerce law, without irritating competition. The collapse of the Washington Bank, aside from remarks respecting the culpable management of the institution, excited little comment. Reports prejudicial to the Mechanics' and Traders' Bank were ascertained to have no just foundation, and the directors offer \$5000 to ascertain their origin. Among unfavorable influences were advices from the West that the railroads were again cutting rates, and the passage by the Nebraska Legislature of a maximum freight rate bill, also of measures hostile to railway and mortgage investments, fostered by the Farmers' Alliance in Minnesota. By some it is asserted that the cutting of rates on the Missouri Pacific is the work of Mr. Gould, indicating that he is first to violate the compact represented by the Western Traffic Association, in which he is the foremost figure, while in other quarters it is affirmed that Mr. Gould has no jurisdiction in the case, the trunk lines alone being responsible for rates from Eastern points. Bank clearings in 58 cities last week show an aggregate decrease of 10.2%; outside of New York, 4.8%; Boston, Philadelphia, Baltimore and Pittsburgh all show a decrease, while there is improvement in St. Louis, Cincinnati, Buffalo and Providence.

The stock market showed little life until Monday, when National Cordage, American Sugar Refining and Cotton advanced. It was influenced to some extent by reports that the Maximum Freight Rate bill passed by the Nebraska Legislature will be vetoed by the Governor. New York Central was only slightly affected by the announcement of the deal with the Canadian Pacific, by which the latter obtains an entrance to New York over the Rome, Watertown and Ogdensburg, the West Shore and the New York Central. The statement of the C. B. and Q. for February was better than was anticipated.

United States bonds were firm, as follows:

U. S. 4½%, 1891, registered.....	102
U. S. 4½%, 1891, coupon.....	102
U. S. 4%, 1907, registered.....	121½
U. S. 4%, 1907, coupon.....	122½
U. S. currency 6s. 1895.....	116

Silver bullion certificates sold at 98. Bar silver in London 48½d. per ounce.

Money was a little firmer, owing to preparation for April settlements, and Chicago required large sums for speculation in grain and hog products. Time money was 4@5%, according to period, on good collateral. The market for commercial paper is dull. Prime indorsed bills receivable are quoted at 5@5½%, and first-class single-name paper at 6@7%. Easy money is now looked for until autumn. The weekly statement of the associate banks was received with little interest. The loss was only \$613,000 in aggregate reserve, which now stands at \$8,441,800. Loans were expanded \$2,380,-700.

Dullness in the merchandise markets in New York was partly due to the Easter holidays. Among dry goods jobbers the outlook for fall demand is good. The Sugar Trust war is supposed to have ended by a division of territory with Mr. Spreckels. Mercantile collections are reported slow.

The market for sterling was dull, with posted rates at \$4.86½ @ \$4.89.

The forthcoming report of Mint Director Leech on the production of precious metals for 1890 will show the great fluctuations in the value of silver caused by legislation. The new law went into effect August 13. The highest point touched was in New York on August 19, \$1.21 per fine once, the highest price reached in 12 years, and in London on September 3, 54½ pence (\$1.1975) per fine ounce. The price in New York did not vary materially from August 19 to September 3, when a decline commenced, which extended, with some fluctuations, to the end of the calendar year. The lowest price of silver during the year was 44 pence per ounce, British standard, equivalent at the par of exchange to \$0.9645 per fine ounce. The highest price reached was \$1.21, a variation of about \$0.25 per ounce, or about 26 per cent. The average price during the year was in London, 47½ pence (\$1.0467) and in New York, \$1.05329.

Metal Market.

Copper.—The demand for Lake Superior Copper has been somewhat freer, and the market shows rather better tone. From outside sources about 200,000 pounds of Ingot have been secured at 13½¢, and the quantity offering at that price does not appear to be as large now as it was a week ago. The mining companies, it is reported, have booked very fair orders at 14¢ for future deliveries, and it is claimed that the price was without guarantee on the part of the sellers against any possible decline. The troubles at the Anaconda mines have restricted the movement of Pig Copper considerably, and prices for Arizona Ingot and Casting Copper are a shade firmer. Arizona is selling at 13¢ in moderate quantities, prime casting brands being 13½¢, but inferior sorts may be had at a shade less.

Pig Tin.—During the early portion of the week under review several hundred tons were turned in a speculative way at higher prices, and the market has since ruled firm, although quieter. The advance, taking place as it did in the face of heavy shipments from the East, suggested that speculative manipulation is responsible for the entire movement, and the subsequent inaction reflects doubt as to the permanency of the rise. At the close 10-ton lots on the spot were quoted at 20.30¢ net cash and smaller quantities at 20½¢ @ 20.60¢ regular. May delivery was 20.15¢ bid and 20.30¢ asked, and June 20.10¢ bid, 20.30¢ asked. Shipments

from the Straits last month, as recorded on the Metal Exchange, were 1900 tons to Great Britain, 1200 tons to America and 425 tons to the Continent, against a total of 2400 tons in February. The stock on spot here is variously estimated at 1100 to 1500 tons, and the quantity afloat for this country at 2650 tons.

Pig Lead.—Business has been of somewhat larger volume, and the market is firm at the advance established last week. Consumers' purchases, it is estimated, amount to about 1000 tons. A few parcels were secured at as low as 4.32½¢, cash, for early delivery, but the transactions were chiefly at 4.35¢ @ 4.37½¢, with up to 4.40¢ paid for future shipments in a few instances. The demand has moderated during the past few days, but the offering is no freer and sellers make no concession.

Spelter.—The demand has been unimportant, and the offering is of the same general character as heretofore. Values have not changed, 5.10¢ @ 5.15¢ still being quoted for prime Western in carload lots, early shipment.

The *Engineering and Mining Journal*, which makes an annual mess of metal statistics, magnanimously gives its practical approval to the Zinc statistics published by Henry Merton & Co. They are substantially correct, with the exception of the estimated product of the Eastern and Southern works, which are altogether wrong. As an example of the statistical capers of our contemporary we may note that in its issue of January 3 it made the Illinois product decline from 23,620 net tons in 1889 to 15,052 tons in 1890. Missouri took an inexplicable jump from 10,381 net tons to 21,487 tons, while the Southern and Eastern States soared from 9797 in 1889 to 14,143 tons in 1890, when as a matter of fact the product declined somewhat. The Lead figures are equally unreliable. In the second line of its Lead report, the product of Soft Lead is given at 53,000 tons, while in its table in the same article, the States of Missouri, Kansas, Illinois and Wisconsin are credited with 58,000 tons, having jumped from 34,000 tons in 1889.

Antimony.—The movement is very slow at present, and wholly of a jobbing character, with prices rather weak. Hallett's is quoted at 15½¢, LX at 16½¢ and Cookson's at 17½¢, in wholesale quantities.

Tin Plate.—Business has continued dull and the market is still rather unsettled. All large buyers seem to have provided for their probable wants for some time ahead, and the jobbing demand is hardly up to the average. Out of current heavy arrivals there is more or less stock offering with slight pressure and at rather lower prices. Quotations for large lots on the spot are as follows: Coke Tins—Penland grade, IC, 14 x 20, \$5.25 @ \$5.30; J. B. grade, do., \$5.35 @ \$5.37½; Bessemer do., \$5.35; Siemens Steel, \$5.55. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.35; for each additional X add \$1.50; Allaway grade, \$5.90 @ \$6; Grange grade, \$6.10; for each additional X add \$1. Charcoal Ternes—Worcester, 14 x 20, \$5.62½; 20 x 28, \$11; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15; Dean, 14 x 20, \$5.15; do., 20 x 28, \$10.30; D. R. D. grade, 14 x 20, \$4.90, do., 20 x 28, \$9.90; Mansel, 14 x 20, \$5.05; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.15; do., 20 x 28, \$10.20; Daffryn, 14 x 20, scarce, do., 20 x 28, \$10.62½. Wasters—S. T. P. grade, 14 x 20, \$4.85; do., 20 x 28, \$9.62½; Abercarnie grade, 14 x 20, \$4.85; do., 20 x 28, \$9.50.

New York Metal Exchange.

The following sales are reported :

WEDNESDAY, March 25.

25 tons Tin, April	20.15¢
25 tons Tin, May	20.10¢
20 tons Tin, March	20.15¢
15 tons Tin, spot	20.20¢
50 tons Tin, April	20.20¢
160 tons Tin, April	20.25¢
10 tons Tin, May	20.15¢
25 tons Tin, May	20.20¢
25 tons Tin, spot	20.25¢

THURSDAY, March 26.

25 tons Tin, May	20.20¢
50 tons Tin, April	20.25¢
35 tons Tin, April	20.30¢
10 tons Tin, March	20.30¢
16 tons Lead, June	4.50¢

TUESDAY, March 31.

10 tons Tin, spot	20.30¢
10 tons Tin, August	20.20¢
20 tons Tin, April	20.25¢

Coal Market.

The Anthracite trade is unchanged by change of schedule, all circumstances affecting prices being about as heretofore. Steam sizes of Coal are firm and higher, showing the effect of restriction. Lehigh Buckwheat, f.o.b., is \$1.80, and Pea \$2.40. Free-Burning Lehigh a shade higher than these figures, and is above the company's schedule, Buckwheat selling at \$2 and Pea \$2.85. All these are scarce. The market as a whole is flat and unprofitable. Nothing is known at the New York offices of an impending strike in the Anthracite trade. Respecting the Bituminous region a report comes that, influenced by President Gompers of the American Federation, the miners resolved at a conference of the Executive Council to inaugurate at once the eight-hour day which had been arranged for May 1. The Coal operators fail to see its significance, since the men produce Coal by the ton and not by the day. In the Coke region the struggle is unabated, but operators regard the attack on the Coke ovens as a grand mistake, ruinous to the cause upheld by the riotous workmen. The Western Association, at a meeting on Tuesday, postponed action upon prices until April 21, by which time the railroads will have fixed their tolls. Meanwhile shippers and operators will wait, and as stocks at Western points are large no inconvenience is expected to result. The Lehigh Valley Company have made no announcement of their intentions in reference to the order of the Interstate Commission to reduce tolls on Coal 15¢ @ 20¢ per ton on April 20.

Official prices for the spring trade compare with those of last year as follows:

1890.	1890.	Increase.
Grate	\$3.50	\$3.35
Egg	3.60	3.35
Stove	3.75	3.50
Chestnut	3.50	3.35
		.15

Individuals cut something below these figures.

The companies continue to mine Coal far in excess of demand, the figures already reaching 1,750,000 tons over last year. The week's production was 582,315 tons; total this year, 7,356,799 tons. The Pennsylvania Coal tonnage for the week was 290,641 tons, and of Coke 34,040 tons. The total Coal and Coke tonnage of the Pennsylvania Railroad for the year has been 8,855,061 tons. The Reading tonnage for the week was 175,000 tons.

Imports.

Hardware, Machinery, &c.

Amsauck, G. & Co., Mach'y, cs., 6
Boker, Hermann & Co., Mdse., cs., 7
Cadmus & Co., Iron Gallot Hooks, bxs., 5
Coventry Machinist Co., Mdse., csc., 1
Field, Alfred & Co., Mdse., cs., 20
Jordan, A. J., Mach'y, cs., 2
King, William, Mach'y, pgs., 30
Lau, J. H. & Co., Arms, cs., 8
Oastler, W. L., Mach'y, pgs., 16
Pioneer Iron Works, Mach'y, bxs., 2
Schoverling, Daly & Gales, Arms, cs., 3

ebout, C. H. & Sons, Anvils, 30
Ward, Jas. E. & Co., Guns, cs., 2
Whitney, W. R., Nails, kgs., 30
Wiebusch & Hilger, Mdse., cs., 11; Anvils, 153;
Hdw., cs., 2
Order—Mach'y, pgs., 33

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, March 31, 1891.

Pig Iron.—There has been no change for the better during the past week. Not only does the demand continue closely of a hand-to-mouth character, but prices are weak and lower. This may be attributed largely to the belief that the Coke strike is about over, and that the strikers will succumb to the terms offered by the operators. Moreover, the demand for finished material continues slow and disappointing, although there is not much doubt but what this will improve as the season advances. While it is true that the stock in first hands in this district is being steadily reduced, as consumption is much larger than production, it is also true that consumers have no difficulty in getting all they want, and that, too, at lower prices than obtained a few weeks ago. Bessemer Pig has sold down 25¢ to 50¢ per ton the past week, and there has been a corresponding decline in other grades. Consumers, as a rule, are refusing to buy a ton more than they can possibly afford, from which it is evident that they are not apprehensive of higher prices, and have resolved, should there be a further decline, to be in position to take advantage of the same. We quote prices as follows:

Neutral Gray Forge	\$14.25 @ \$14.75.	cash
All-Ore Mill	15.25 @ 15.50.	"
White and Mottled	13.50 @ 14.00.	"
No. 1 Foundry	16.75 @ 17.00.	"
No. 2 Foundry	15.75 @ 16.00.	"
No. 3 Foundry	14.75 @ 15.00.	"
No. 2 Charcoal Foundry	21.50 @ 22.00.	"
Cold Blast Charcoal	25.00 @ 28.00.	"
Bessemer Iron	16.00 @ 16.25.	"

Included in the sales during the week under review was a lot of 1000 tons Bessemer for April delivery at \$16, cash. Two barges of Southern Iron, direct from the Sheffield, Ala., furnaces, arrived on Saturday night, and three more barges of the same will arrive here within the next couple of days. Another full tow is now being loaded there for this port. The cost of transportation by river is about \$1 per ton less than by rail.

Muck Bar—Continues dull and prices are weak and drooping. We now quote at \$26.50 @ \$27. There appears to be considerable offering, while the demand is light, owing to the disappointing condition of the market for finished material.

Manganese—Continues dull; demand almost entirely for small lots to supply immediate actual wants. Small sales of 80% domestic at \$64, which is even less than 80% foreign can be laid down here from the seaboard.

Manufactured Iron.—While nearly all the mills are in operation, but few of them are working up to their full capacity, and trade is generally reported slow and disappointing; it is not what it should be at this season of the year. What is wanted now more than anything else to improve the Iron and Steel business is good weather and good roads, so that all kinds of outdoor work can be resumed. For some time past in many parts of the country it was all a team could do to haul an empty wagon. Prices continue easy, in sympathy with the raw material, but we repeat former quotations: Bars, 1.75¢ @ 1.80¢; Plate and Tank, 2.10¢ @ 2.15¢; No. 24 Sheet, 2.80¢ @ 2.85¢. All 60 days, 2% off for cash. Skelp Iron is quoted at 1.70¢ @ 1.72¢ for Grooved, and 1.90¢ @ 1.95¢ for Sheared, four months, 2% off for cash. At valley mills Bars are quoted at 1.80¢ @ 1.85¢, half extras, f.o.b. at will.

Nails.—There is no improvement in the demand for Cut Nails, and the outlook for the same is not as encouraging as it might be; however, business may pick up as soon as the season becomes more advanced. We continue to quote at \$1.60 @ \$1.65, 60 days, 2% off for cash, for desirable orders, and 5¢ @ 10¢ per kg more in a jobbing way. In regard to Wire, while we continue to quote at \$2.10, 60 days, 2% off for cash, it is possible that the price quoted might be shaded on desirable orders, which do not appear to be very numerous at the present time.

Wrought-Iron Pipe.—It is stated that there has been some "cutting" of late, which is frequently the case when trade is a little slow, as has been the case for some time past. An improved demand is looked for in April. March is nearly always a dull month in the Pipe trade. We continue to quote discounts as before: On Black Butt Pipe, 47½%; on Galvanized do., 40%; on Black Lap-Welded, 60%; on Galvanized do., 47½%; Boiler Tubes, all sizes, 50% off; Casing, 50% off.

Barb Wire.—Business reported fair; prices unchanged. Ghdden Painted, \$2.85; do., Galvanized, \$3.40; Four Point Painted, \$2.80; do. Galvanized, \$3.35, f.o.b. at works.

Structural Iron.—There is not the business expected nor usual at this particular time, but it is hoped there will be an improvement later on. Prices are weak, although we continue to quote as before: Channels and Beams, 3.10¢; Angles, 2.05¢; Steel Sheared Bridge Plates, 2.30¢ @ 2.35¢; Universal Mill Plates, Iron, 2.10¢; Refined Bars, 1.90¢.

Steel Plates.—But little new business has been placed here of late, but some of the mills are still pretty well employed in working up former contracts. Prices are easier: Fire Box, 4.25¢ @ 4.50¢; Flange, 2.75¢; Shell, 2.55¢; Tank, 2.20¢.

Merchant Steel.—Business continues light, while prices remain unchanged: Tool Steel, 7¢, 7½¢ @ 8¢; Bessemer Machinery Steel, 2½¢; Crucible Machinery, 5¢; Crucible Spring Steel, 4¢; Bessemer Spring Steel 2½¢; Tire Steel, 2.20¢; Steel Bars, 2.20¢.

Wire Rods.—There is a little more inquiry, but very little new business has been reported of late. Domestic may be quoted at \$38 @ \$38.50, cash, at makers' mill.

Old Rails.—There has been little done recently in Old Iron Rails, and there appears to be but very little inquiry; may be quoted in the absence of sales at \$24 @ \$24.50. Sales of Old Steel Rails at \$17.50 for short and mixed lengths; and there is not the demand for these there was a month or more ago.

Billets and Slabs.—There is not much inquiry for Billets, and the market, in addition to being dull, is weak. We continue to quote at \$25.75 @ \$26, with a sale of 1000 tons reported at the inside figure. We are also advised of a sale of 1200 tons Slabs, special size, at \$26.50.

Steel Rails.—Business continues quiet, and the outlook for an early improvement is not as encouraging as it might be. The Edgar Thomson Works have not yet been started up, and it is not known when they will be.

Railway-Track Supplies.—There is no improvement to note in demand and no change in prices. Spikes, \$2.05, 30 days, f.o.b. at makers' works; Splice Bars, 1.90¢ @ 2¢; Track Bolts, 2.80¢ with Square and 2.90¢ with Hexagon Nuts.

Old Material.—There is still considerable inquiry for No. 1 Railroad Wrought Scrap, which is steady in price at \$21, net ton; Old Iron Axles quoted at \$27 @ \$28; Cast Scrap, \$14 @ \$14.50, gross ton; Old Car Wheels, \$17, gross; Steel Rail and Bloom Ends, \$17 @ \$17.50, gross.

British Iron and Metal Markets.

[Special Cable Dispatch to *The Iron Age*.]

LONDON, WEDNESDAY, April 1, 1891.

The transactions in Pig Iron warrants have been on a limited scale. The Easter holidays have served to check operations in some degree, but it is apparent that outside interest is extremely tame and that the general situation is devoid of incentive to action apart from cautious venturing on "short" account. Prices are considered low, but the supply of warrants on sale is comparatively large, and the blowing in of additional Scotch furnaces, along with unfavorable accounts from Middlesborough and the Hematite sections, has a rather depressing influence. There are at present 37 Scotch furnaces blowing in that promise to soon neutralize the late steady depletion of stocks. Cleveland Iron masters, owing to the poor condition of business, are endeavoring to bring about a reduction of 12% in workmen's wages, and several furnaces are damping in consequence of unremunerative business. On latest trading Scotch warrants sold at 42/6 @ 42/8, Cleveland at 38/8 and Hematite at 47/8.

In the face of quiet speculation and the report of heavy shipments last month from the Straits, prices for Block Tin have been firm. Consumption is still of good volume, but speculation is tame, with very little outside interest. Prices have averaged 5/ @ 10/ higher this week than last.

In Copper there has been a slight advance, and the market is firmer. Reports of probable restriction of American supplies, based upon the difficulties at the Montana mines, have had some influence, but the improvement in the statistical position in Europe has quite as much bearing.

The market for Tin Plate has been quiet. Lower prices quoted for future deliveries have attracted more attention, but aside from moderate sales of ordinary Bessemer at about 17/6 little business has transpired.

Scotch Pig Iron.—For makers' Iron the demand still runs light, and prices are unsettled.

No. 1 *Coltness*, f.o.b. *Glasgow* 65/
No. 1 *Summerlee*, " " 61/6
No. 1 *Gartsherrie*, " " 61/
No. 1 *Lanark*, " " 61/
No. 1 *Carnbroe*, " " 49/
No. 1 *Shotts*, " at *Leith* 62/6
No. 1 *Glenarnock*, " *Ardrossan*
No. 1 *Dalmellington*, " 56/
No. 1 *Eighton*, " 51/
Steamer freights, *Glasgow* to *New York*, 2/; *Liverpool* to *New York*, 10/.

Cleveland Pig.—No improvement in the demand, and price still weak. Makers quote at 39/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Demand is running light but makers yield little, despite the further decline in warrants, and quote 51/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Business is slow and values are unsettled. English 20% quoted at 95/ @ 97/6, f.o.b. shipping port.

Steel Rails.—There is more business, but prices are without change. Heavy sections quoted £4. 12/6, and light sections £5. 5/ @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Market very quiet and prices nominal at £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The demand continues slow and prices are barely steady. Bessemer, 2½ x 2½ inches, quoted at £4. 10/ f.o.b. at N. W. England shipping point.

Steel Slabs.—A small trade passing at former prices. Bessemer quoted at £4. 10/ f.o.b. at N. W. England shipping point.

Old Iron Rails.—Market continues dull and unchanged. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—Dealings are light and at old prices. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—The market dull and unchanged. Bessemer quoted at £2. 17/6 @ £3, f.o.b.

Tin Plate.—Business moderate and prices in buyers' favor. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade.....	19/ @ 19/3
1C Bessemer Steel, Coke finish.....	17/6 @ 18/
1C Siemens.....	17/9 @ 18/3
1C Coke, B. V. grade.....	17/3 @ 17/6
Charcoal Terne, Dean grade.....	17/3 @ 17/6

Manufactured Iron.—No improvement in the demand, and prices rather weak. We quote, f.o.b. Liverpool:

£ s. d.	£ s. d.
Staff. Marked Bars	8 10 0
" Common "	6 7 6
Staff. Blk Sheet, singles.....	6 17 6
Welsh Bars (f.o.b. Wales)...	5 17 6

Tin.—The market closed steady but quiet. Straits quoted at £90. 7/6, spot, and £90. 17/6 for three months' futures.

Copper.—Demand fairly active. Prices slightly irregular. Merchant Bars quoted at £53, spot, and £53. 2/6, three months' futures. Best Selected, £57.

Lead.—Business fair, and the market steady at £12. 12/6 for Soft Spanish.

Spelter.—The market quiet, but steady, at £22. 17/6 for Ordinary Silesian.

NEW PUBLICATIONS.

RUBBER HAND STAMPS AND THE MANIPULATION OF RUBBER. By T. O'Conor Sloan, A. M., E. M., Ph.D., New York. Norman W. Henley & Co. 12mo; 146 pages; illustrated; \$1.

The extensive use of India rubber in its native and vulcanized forms, within the century and a half since the discovery of its uses by aboriginal tribes, makes this a timely treatise. It brings this material to the experimental knowledge of every thoughtful and practical person, and stimulates new invention. Its information about the material and the simple machinery for its transformations, can be utilized at small expense. There is an interesting chapter on the natural history of rubber. It is stated that this gum is extracted from the juices of trees and shrubs of five distinct families. They

grow in Central and South America, in Africa, Java and India. The processes of collecting and preparing for the market which are followed by the natives vary in these different countries, as does also the quality of the rubber, in which respect the Brazilian gum excels. Charles Goodyear's great invention of vulcanizing it, made in 1839 and patented in 1844, consisted in combining soft rubber with sulphur, and the similar inventions of Nelson Goodyear, patented May 6, 1851, and of Austin G. Day, who obtained a patent August 10, 1858, both for similar treatment of hard rubber, gave incalculable value to this material for the innumerable arts and uses of human life. Its effect was in this regard like that of the application to iron of the Bessemer process of steel manufacture. Rubber has thus become a plastic substance of remarkable qualities, within the reach of any person ordinarily skilled in manipulation. This manual clearly describes the processes, which, when so easily applied, should suggest many others. The manufacturers of wearing materials, of paint mixtures, of moulds and matrices, of utensils, of tools and professional and scientific instruments, of ornamental and pressed work and types of every variety and use; of glues, stamps, toys, cements, and manifolds of copy, and of a hundred other classes of trade products, will find this book helpful in their business, and only demand that it shall be made much more complete and detailed and extended in its treatment. This product of native forests can be cultivated, and is so abundant already in nature that its application to human uses, when the raw material shall be made cheaper by reciprocity of trade, is practically unlimited. The progress of rubber in the arts, since a lead pencil eraser of the size of a half-inch cube cost 70 cents, to the common use of the material, even for foot wear and clothing by hundreds of millions of people of the civilized nations, is indeed suggestive of an age of rubber, where rubber may compare with iron in the variety of uses to which it shall be applied, and the conveniences it will furnish to mankind.

HEATING BY HOT WATER. By Walter Jones. Size, 5 x 7½ inches; pages, 116. Published by Crosby, Lockwood & Son.

The full title of this little pamphlet is "Heating by Hot Water, with Information and Suggestions on the Best Methods of Heating Public, Private and Horticultural Buildings. Heating on the High and Low Pressure Systems, Bath Apparatus, &c., giving Causes of and Hints to Prevent Failure." The work appeared as a series of articles in the London *Ironmonger*. The book presents in compact form the general features of the English practice in hot-water heating, and while there are many things about it that may prove suggestive to American readers, we do not think that it could be used as a practical text book by hot-water heating men in the United States. The high-pressure system, for instance, with which the work opens, is all but unknown here, though formerly it was almost the exclusive system employed in England. Furthermore, the wrought welded boilers described are practically unknown here, where cast iron and sectional construction or riveted wrought iron are used instead. The book is profusely illustrated, and some of the diagrams showing the appearance of water circulation are interesting and instructive, the English apparatus is also thoroughly presented by means of cuts. Many of the tables included will prove valuable to the heating engineer, since the characteristics of water and the natural laws governing its action under the application of heat are the same the world over.

HARDWARE.

Condition of Trade.

THE IMPROVEMENT noted in our last issue still continues, but without material increase in the volume of trade, which appears to be sluggish and to some extent unsatisfactory. In some parts of the country, however, reports indicate a much more satisfactory condition of things, and it is expected that with the advance of the season there will be a marked improvement in trade. Prices are unchanged on the general line of goods, but there are indications of weakness in some staples, so that the market, as a whole, is not characterized by an especially strong tone, and there is little disposition to purchase in excess of early requirements. Collections are rather slow, and there can be little doubt that the present restriction of business, while due to a considerable extent to bad roads and a late season, is in part the result of the financial stringency of a few months ago.

Chicago.

(By Telegraph.)

Heavy Hardware continues quite active, with a good demand for Iron, Steel and General Wagon Makers' Supplies. The Southern trade is diminishing, but Northern markets are holding up well. Collections are very good, considering the complaints now made of business in other lines. Trade in Shelf Hardware runs about as it did last week, with occasional spurts of good orders succeeded by quiet intervals. Personal experience on the part of the writer convinces him that bad country roads are responsible to a greater extent than would be supposed for the bad condition of trade. A mud embargo exists all over the West, which prevents outdoor work, and will only be raised after successive days of fair weather that the elements do not seem inclined to grant. Staple goods are most neglected at present, the demand running almost entirely to Hardware.

St. Louis.

(By Telegraph.)

The Hardware trade remains in much the same condition as last noted. The recent severe changes in the weather have retarded business to some extent, and jobbers do not look for any great improvement until the weather gets thoroughly settled. The demand for Shelf Goods is satisfactory, but Heavy Hardware is dull. There is some talk of a cut in Cartridges, but there is nothing definite as yet. Cut Nails are dull at unchanged prices. Wire Nails are weak at from \$2.30 to \$2.35. The demand for Barb Wire is improving, and the recent advance is maintained to a certain extent. Copper and Copper goods

are weaker. Tin Plates are much firmer, in sympathy with the advance in other markets. Complaints regarding collections continue.

New Orleans.

A. BALDWIN & Co.—Trade in this section and throughout Texas is very quiet, and there is nothing new in the situation here. The crevasse in the levee opposite this city interrupted all transportation between New Orleans and the West for about a week, as the tracks of both roads are covered with the water from the crevasse. They have now resumed connections and we trust things will brighten up very shortly, especially if we have clear bright weather. Collections are fair, but the demand for goods seems to be getting smaller.

Cleveland.

THE W. BINGHAM COMPANY.—Since our last writing trade has improved somewhat, although there is still room for more, but it cannot be looked for until we can get some weather that will dry up the roads, which are reported from all sections tributary to us as "simply horrible." March as a whole, compares favorably with a year ago, which fact, taking the late financial flurry, and other things into consideration, we consider very encouraging. There has been no material change in prices in the past two weeks. The weakness in some lines is still apparent. Fence Wire of all kinds is in good demand at advanced prices, and the mills are overloaded with orders. City retailers report trade as fair, with good demand for Builders' Hardware. Collections continue poor.

Baltimore.

CARLIN & FULTON.—It was hoped that with the vernal equinox passed, there would be a return of good weather and consequently active trade, but it seems that the elements have conspired against business, and it still drags. There is, however, amid the experiences of barometric depressions, storm areas, cold waves and cautionary signals, one comforting thought, which is that vegetation may be retarded enough to escape the late frosts which have for the last two years killed the fruit and inflicted great pecuniary loss on the entire country. Collections are generally fair, and we suppose the indebtedness of the average dealer is no larger (if as great) than is usual at this time of the year. There is possibly in some sections another reason than that of bad weather for dullness of business, which may be that the money which should be in active business circulation is invested in real estate, awaiting the construction of the furnaces, factories, colleges, hotels and cities which imagination has so graphically pictured in the prospectus of many an improvement company. Prices remain about the same, the demand for goods not being sufficiently great to stimulate

either production or advances, while it seems the margins are already too low to force sales by further concessions.

Louisville.

W. B. BELKNAP & Co.—While business does not seem brisk day by day, the aggregate results are not disappointing. In some shape or other the great consumption of the country shows itself in the tonnage moved, and we were not surprised to see that the reports from 145 railroads show an increase of over 4 per cent. in business as against the same period last year. When we take into consideration that all water courses are full and navigation available for transportation to the largest possible extent, this showing on the part of the railroads must be all the more gratifying. We are suffering from: 1. A lack of confidence induced by the tight money market of last fall, from which the country has never fully recovered. 2. From a bad crop year in this part of the country—neither fruits nor cereals were a success. The cotton crop was large, but the prices realized commensurately small. So that failures have been uncomfortably numerous, but still the legitimate business of the country seems good for obligations—all the better since it is indulging in few new or extensive obligations. Up to now we have had no spring at all except a little touch of it in February.

The current month has been extremely wet and cold and barring not only farm operations, but keeping the country roads in such a soaked, saturated condition that there could be no movement of merchandise. Some of these days this side of the millennium we hope to see good turnpike roads throughout our country, that spring showers may not be the bugbear which they are necessarily at present. Values are steady, prices low and safe, and while some claim that there may be a still further readjustment "when the coke strike ends," we are inclined to the opinion that the effect of this has been fully discounted, and that if it were to end to-morrow there would be little if any change. Production has been reduced to the needs of the country, there does not appear to be an excess anywhere. By early summer, should crop prospects be good, we look for a well assorted trade. Prices of Wire meantime are well maintained. Metal markets show, if anything, a little stiffening. Lead is, if anything, higher. The purchase by the Water Company here of 40 tons for their own use developed that fact plainly.

San Francisco.

HUNTINGTON-HOPKINS COMPANY.—The situation in this territory remains substantially as at our last report. Sales thus far this year have been in excess of a year ago, and the indications are that the present good feeling will continue. Merchants are not laying in any large or speculative stocks, but are buying only

for early requirements. Prices continue steady and without important change. Collections are still somewhat slow.

Boston.

BIGELOW & DOWSE.—There are still few indications of spring in Northern New England, and it is too early to expect much trade from that section. In the more Southern part trade is good, and the Hardware jobbers are doing a good business. Orders are better assorted, and staples do not form the principal part of orders, as they have heretofore. Poultry Netting is in good demand, but it is being sold at unremunerative prices. The manufacturers are not disposed to make any money themselves or to allow any one else to do so. It is an unfortunate state of affairs when a large manufacturer has to send out his agents to solicit orders for 10 or 20 bales of Netting. It will be serving them right when the larger buyers refuse to patronize them. There is a good sale for Steel Cut Nails, and prices are unchanged. Our market on Wire Nails did not change when the Western mills advanced their prices, and it still remains firm. The prices of Axes are weak, and, as the Axe combination is meeting a sharp competition from outside makers, there is a prospect that Axes will be sold at a very much less price this fall. While sales are in excess of last year, remittances are much behind. Demand money at the Clearing House loans freely at 5 per cent., and business paper must be first class to discount as low as 6 per cent.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY.—For this market we have to chronicle a slight improvement in general trade for the past two weeks, and if the weather, which still continues stormy and unpleasant, should settle down to a spring basis, the country roads, now impassable, would soon become in shape for transportation and relieve the embargo that now exists from this cause. Just now the heaviest part of the trade comes from Iowa and the far West. The retail trade of the city has been rather dull; but, in spite of all drawbacks, the wholesale trade of Omaha is really better than ever before. This may seem strange, in view of the fact that large sections of the State have been in a very bad condition from crop failures, but this really cuts a small figure, for the western half of Nebraska is hardly a drop in the bucket, as compared with the great extent of country covered by Omaha jobbers. They have pushed out further than ever during the past six months into the far Western States and Territories, sending representatives clear to the Pacific Coast; and again on the east they have gone further into Iowa, encroaching on the territory of older and larger cities, and find there a most remunerative field. More than this has been accomplished, for besides covering a larger territory, a better class of trade has been obtained than during any previous year. Thus Omaha has grown in importance in the eyes of the people, and

they are finding that it is to their advantage to patronize Nebraska's metropolis. There is no denying the fact that the retail trade of the West from Central Iowa to the Pacific Coast is coming to look upon Omaha more and more every year as their commercial center.

Philadelphia.

SUPPLEE HARDWARE COMPANY—While trade has shown signs of improvement during the last two weeks, and in many sections quite equal to that of last year, yet the rains have materially interfered with trade in some sections. There are certain sections where trade is tributary to Philadelphia in which they have had almost constant rains for the last six weeks, with an intermission of a day or two only at a time; consequently in these sections the roads have been quite impassable. It is, therefore, no wonder that in certain locations buyers are not placing any large orders. In other sections, however, not affected by the rains or bad roads, salesmen are sending in their customary number of orders for fair lines of goods, and in these sections trade is quite equal to that of last year. Mail orders are quite up to the usual standard in size and frequency. Prices are fairly well maintained. Barb Wire and Wire Nails especially are held higher than when we last referred to them. Collections are not up to what is usual this time of the year, although money in the large cities is more abundant than it was two weeks ago. Owing to the near approach of April 1 the banks are not anxious to send money to the interior. There will be a change in this particular, however, almost immediately after April 1, when we think money will flow into the interior in fairly large quantities, which should improve collections out of the city.

Notes on Prices.

Cut Nails.—The market is in substantially the same condition as at our last review, the amount of transactions being moderate and the tone rather weak. Concessions are made on large purchases from the mills from the prices which have until recently been adhered to, and while \$1.60 for such lots at mill may still be referred to as the quotation, this figure is shaded in special cases. The disposition to which we have referred on the part of the mills to limit their production is showing itself in considerably curtailed operations, a number of the mills having shut down. Quotations for small lots from store in New York are on the basis of \$1.75 for Iron and \$1.85 for Steel, with concessions of 5 or 10 cents for large lots.

Chicago, by Telegraph.—The demand for Steel Cut Nails is no better than it has been, and manufacturers are not looking for any improvement until stocks move more freely from retailers' hands. Factory quantities are quoted at \$1.75, Chicago, usual average. Jobbers still quote \$1.85 from stock, with 5 cents off for car-loads.

Wire Nails.—There has been during the past week or two a failing off in the

price of Wire Nails, owing principally to the desire to sell on the part of the mills, whose orders are understood to be pretty well cleared up. The quotation for large lots at factory is \$2.10 @ \$2.15, but it is understood that concessions are made from these figures. Small lots from store in New York are held at \$2.30 @ \$2.35, with 5¢ off for carload.

Chicago, by Telegraph.—Wire Nails are inclined to weakness, as some of the manufacturers are rushing sales on a market known to be well stocked. The usual quotation is \$2.20, Chicago, from factory, but this is shaded by some makers. Jobbers quote \$2.30 from stock, but their prices are also tending in favor of the buyer.

Barb Wire.—The Barb Wire market may be characterized as regular and only moderately active. The new prices are understood to be well maintained by the manufacturers, who are still occupied on orders accepted before the advance. The stocks in the hands of dealers are thought to be ample for their requirements for some time to come. Prices are on the basis of \$3.50 for Four-Point Galvanized and \$2.95 for Painted, with the regular abatement of 10 cents for carload lots and 5 cents for jobbers and railroads. Terms 60 days, or 2 per cent. discount for cash in ten days, with delivery at leading points.

Chicago, by Telegraph.—Manufacturers report the advanced price well sustained, and state that they are disposing of their product as fast as it is turned out. The demand from jobbers' hands here is quite light at present, owing to the cessation of outdoor work through the country.

Cast Butts.—The Cast Butt market is not as regular as it has been for some time, and it is understood that concessions are made from prices recently ruling.

Wire Goods.—A meeting of the manufacturers was held last week, but no change was made in prices, which are understood to be pretty regularly maintained.

Solid Steel Pliers.—The following are the prices of the Solid Steel Pliers, a description of which is given on another page, as manufactured by the Upson Nut Company, Unionville, Conn.:

5½ inch, per dozen...	.....	\$2.00
6½ inch, "	.....	2.25

Glass.—There is nothing of interest to announce in the Glass market. Prices remain unchanged at 80 and 10 per cent. discount for small lots and 80 and 20 to 85 per cent. discount for large lots. It is reported from Pittsburgh that but 70 per cent. of the Glass factories are in operation, and that the amount of Glass in stock is less than last year at this time. As a result of these reports there is a tendency on the part of some jobbers to withdraw present quotations; prices to be those ruling at date of sale. Such a scarcity of Glass would probably offer enough inducement for idle factories to start up again.

Electrical Goods to Carry in Stock.

THE PROBABLE REASON why the retail Hardware dealers have been slow to take hold of Electrical Goods and carry them in stock is because they have not known what to buy, and what kinds and class of goods would be salable. They have felt reluctant to trust to their own judgment in this matter, as their knowledge of the goods offered in this line has been so limited. They have also been ignorant of manufacturers' names, and of where their orders would be properly filled. We take pleasure in giving, for the benefit of such dealers, communications received from some of the leading manufacturers of Electrical Goods, in which they make suggestions to the retail trade in regard to handling these goods, with suggestions, also, as to what kinds of goods are best suited to make up a well assorted stock order as a beginning in this line. The Western Electric Company, New York, in reply to an inquiry on this point, offer these suggestions for the guidance of the Hardware dealer in small towns:

Let him start in with a small stock of staple articles only; as his trade in this line grows he can add to his stock such goods as he has a demand for, and will not be hampered by a load of unsalable material. He should handle only reliable goods. Cheap, poor material in the Electrical line is worse than nothing, and will only result in destroying that branch of business. The following, in our estimation, would be a good stock for a small dealer to carry, and we affix thereto our trade prices on same, which are, of course, subject to variation. Goods can, of course, be furnished at a much higher and lower cost, but we have endeavored to make the list at an average price:

12 only 2½-inch Iron Box Bells.	\$0.65 each.
6 " 3 " " " " .70 "	
3 " 4 " " " " 1.00 "	
1 " 5 " Skeleton Bell.	2.75 "
12 " 2½ " Wood Box Bells	.65 "
6 " 3 " " " " .70 "	
3 " 4 " " " " .85 "	
48 " Assorted Wood Push-Buttons.	.10 "
12 only Assorted Bronze Push-Buttons.	.35 to \$1 each.
10 pounds each of four colors Wire.	.30 per pound.
5 pounds White Rubber Tape	.60 "
5 only 1-point Wood Base Switches.	.25 each.
12 Cells Leclanche Battery.	.50 "
12 Extra Leclanche Zincs.	.05 "
25 pounds Sal Ammoniac.	.10 per pound.
5 " Staples.	.15 "

The cost of this assortment would be about \$60, and can obviously be increased or diminished according to the judgment of the purchaser. It, however, gives an excellent idea of the requirements and cost in embarking in this line of business. Bell sets are also put up in small boxes, complete, consisting of Battery, Bell, Push, wire and staples, with full directions for putting up accompanying each set. In a communication from J. F. Wollensak, Chicago, the following information and suggestions are given in an interesting manner:

Electric House Bells and their fixtures have undoubtedly become a legitimate and staple article of Builders' Hardware. They are to-day being carried in stock by all live jobbers as well as retail dealers throughout the States and Canada, and

have, it seems, almost completely superseded the old mechanical house bell. All the Hardware trade will soon have of necessity to carry stock. The old prejudice and incredulity of the Hardware dealer relating to electric appliances is fast wearing off, especially with reference to Electric House Bells. These goods are now being packed and labeled in convenient shape the same as other Shelf Hardware, both separate and in sets. The parts are few and simple and readily comprehended by intelligent people, and are easier put up than the old mechanical Bells. So far as Electric Bells are concerned it seems to us not to be a question of whether the Hardware dealer can handle the goods to advantage, but whether he can avoid it in view of the demands. In addition to Electric House Bells and Bell Fixtures a dealer might carry to advantage a line of Electric Light Wires for wiring new houses preparatory to connecting to a main Electric Light Line Wire on the principle of piping a house for gas. These Electric Light Line Wires, as well as Bells and Bell Fixtures, House Call Announciators and Electric Gas-Lighting Burners, a Hardware dealer in the small cities and towns should supply to the bell hanger, plumber, &c., who puts these up. In the larger cities the Hardware dealer usually confines his stock to Bells and Bell Fittings. Our advice to Hardware dealers in this connection is to draw a sharp line and confine their stock of electrical goods to Electric Bells, Announcer Calls and their fittings, and such Electric Light Wires required in a house to prepare the house for receiving the necessary fixtures and connections as referred to above. Let him begin on Bells; the Electric Light branch being a separate, extensive and complicated system, requiring too much technical knowledge for a Hardware dealer to cope with at the present time at least.

J. F. Wollensak of Chicago gives this list as a desirable assortment for the first invoice of Electrical Goods, the prices given being subject to a discount of 20 per cent. :

	List.
Bell Sets, consisting of Iron Box Bell, with 3-inch Nickel Gong; one Ornamental Bronze Push; one Battery; 75 feet Insulated Wire, Staples, Rubber Tape and directions; packed in a wooden box complete, ready for use, delivery or shipment.	\$2.50
Same, with 3-inch Wood Box Bell.	2.65
(These sets are suitable for general front door and interior use, dwellings, offices, factories, &c. The tape is to cover the bare wire when spliced.)	
3-inch Iron Box Bells, each.	.75
3-inch Wood Box Bells, walnut and oak woods, each.	.90
Iron Box Buzzers, each.	.75
(The Buzzer is used instead of a Bell to avoid attracting general attention; it produces a low but distinct humming sound.)	
4-inch Skeleton Frame Bells.	Each \$2.25
5 " " " " .25	.50
Ornamental Bronze Pushes (round).	.35
" " " " (elongated).	.60
Plain Cast Bronze " (round).	.35
" " " " (elongated).	.60
Plain Wrought - Brass Nickel - Plated Pushes (round).	.20
Wood Pushes, assorted woods (round).	.15
Nickel Dining Room Floor Pushes, with loose knobs.	.50
Dining Room Pushes, with 5-foot flexible conductor cord.	1.50
Wood Tassel (pear shaped) Pushes.	.50
Door connections for ringing Bell when Door is opened.	.35
Wood Base Switches, 1 point.	.25
" " " " 3 " .30	.30
(Switches are used to switch from one Bell to another, or to cut out a circuit for doctor's Bells, &c.)	
Nickel Desk Pushes, each.	.80
Compound Pushes, Nickel Plated for Wood, with 2 Knobs, each.	.60
Compound Pushes, Nickel Plated for Wood, with 4 Knobs, each.	.90

Compound Pushes, Nickel Plated for Wood, with 6 Knobs, each.	1.20
Compound Pushes, Nickel Plated for Wood, with 8 Knobs, each.	1.60
Leclanche Disque Batteries (porous cup), each.	.75
Carbon Batteries each.	.75
Battery Zincs, each.	.06
Battery Jars, each.	.18
Sal Ammoniac, 5-ounce bags, each.	.06
Sal Ammoniac, bulk, per pound.	.18
½-inch Electrician Staples, per pound.	.20
Rubber Tape, per pound.	.90
No. 18 Insulated Bell Wire, ½-pound Spools, per spool.	.25
No. 18 Insulated Bell Wire, 1-pound Spools, per spool.	.40
No. 18 Insulated Bell Wire, 8-pound Spools, per spool.	.35

This list of articles will give an excellent idea of what one would need to start with, and can be ordered in quantities to meet demands.

Protection for Retail Dealers.

A MEETING of retail dealers of Hardware, House-Furnishing Goods, Stoves, &c., held at Military Hall, 193 Bowery, New York, on the evening of March 26, Frank Vanderbilt was elected president and Geo. W. Wilson secretary. The following resolutions were indorsed by the meeting:

It having become absolutely necessary for the master tinsers, Stove and Hardware dealers to take some united action to protect themselves from the many abuses and impositions to which they have been subjected in the past, they, at their last meeting, passed unanimously the following resolutions:

Whereas, The manufacturers of and wholesale dealers in Stoves, Hardware, Tin Plate, House-Furnishing Goods, and such other supplies as are used by the undersigned, persist in selling to outsiders and selling retail at wholesale rates to consumers, the result being our injury and embarrassment and the putting of us in the light of extortioners to our customers, seriously impairing our self-respect and demoralizing our business; and

Whereas, The system, or rather lack of system, for protecting us from these wrongs and from others of a similar kind with which you are familiar fails utterly of its purpose, it is absolutely necessary by united action to perfect such a system as will remove from us these evils from which we have suffered for years; therefore, be it

Resolved, That we will withdraw our patronage from any firm or company manufacturing or dealing in the above-mentioned supplies who persist in selling to outsiders or selling retail at other than retail prices after a reasonable time shall have elapsed for this action to take effect.

It was also resolved that all dealers favoring this movement be invited to sign slips furnished, and place them in the hands of the president. The following is the form of slip:

I am in favor of joining the organization of Retail Protective Dealers of Hardware, House-Furnishing Goods and Stove Dealers, and agree that I will live up to the resolutions as indorsed at their meeting of March 26, 1891.

Signature.....
Address.....
Business.....
Date.....

Three wholesale dealers in Ranges, Heaters, &c., signified their sympathy with this movement. A second meeting is to be held at 8 p.m., April 9, at Military Hall, 193 Bowery, New York.

Trade in Minnesota.

AS A RESULT of inquiries sent to a large number of the representative Hardware trade of Minnesota, we learn that the condition of business in general throughout the State varies considerably. In the locations where the winter has been favorable trade is very encouraging, but where there is deep snow or poor roads, especially where the business men are largely dependent upon the farmers for trade, it is not so good. In some sections the stove trade, especially heaters, has been light, as a result of a somewhat open winter. The statement is quite generally made that so far business shows an increase over corresponding months in 1890, particularly so for the months of January and February. There is also a noted demand for the better class of goods. Hardware stocks seem to be ample for all requirements, and on an average are larger than usual. There has been no speculative buying, but the recent low prices of Barb Wire and Nails have induced merchants to anticipate their wants somewhat in these directions. A conservative policy has been followed in purchasing Shelf and other Hardware, and merchants are awaiting the developments of the new crops before stocking up. Prices received for Hardware are fairly well maintained, and a general feeling of confidence prevails that manufacturers' prices will not be lower, but probably advance on some lines. There appears to be in sections of the State where the Farmers' Alliance is strongest a downward tendency in prices, resulting from large houses catering to this trade. While the spring months are always considered the poorest of the year for business, the prospects are very encouraging, and in many cases have not been so flattering for years. Farmers have had a succession of good crops over a large portion of the State, and with seasonable weather a large increase in business is anticipated. There is a general movement reported among farmers of building and improving their homes, and if wheat comes up "healthy" these improvements will be almost universal. Wheat, corn and oats have brought good prices in most cases, though hogs and cattle have not made such good returns. As a result there appears to be more money in farmer's hands, and collections are reported as good for this season of the year, with overdue balances small. In other sections of the State, however, there is no money moving and collections are poor. Traveling salesmen who have an opportunity of aggregating large sections of country are hopeful, and while orders have been small except for Barb Wire and Nails, they are led to believe from their observations that future business will be exceptionally good. There is a large amount of competition in the retail trade, and in some places business is overdone. There are indications of increased emigration for the coming season. Farmers' Alliance legislation against railroads is being watched with interest, as it is claimed, if passed, it will seriously re-

tard railroad building to the detriment of trade. It is also claimed by some that if the bill now before the house is passed, reducing legal interest from 8 per cent. to 6 per cent., it will result in crippling that section of the country for some time to come, as a great deal of eastern money loaned on real estate will be called in, and consequently work injury to business. The rapid drift of the farmer from the one-crop plan to diversified farming is looked upon as encouraging. They are also raising more sheep, and the dairy interest is increasing. Local improvements are being contemplated with the opening of spring, both of a public and private nature. The impression received from reports from many cities and towns in Minnesota is that the outlook is very encouraging, and that the coming season promises to be the most prosperous one that has been experienced for years.

Trade in Louisville.

OUR SPECIAL correspondent in Louisville, Ky., sends us the following advices in regard to the condition of trade under date March 28:

The jobbing trade of this section has been quite unsatisfactory, owing mainly to continued bad weather. The excessive rains depress the farmers, and their pessimistic ideas spread and soon pervade all lines of trade and manufacture. The roads are so bad that enormous supplies of material are accumulated in the woods, and cannot be hauled to the railroads, such as timber, lumber, staves, spokes, &c., and the country merchants who depend largely on this source for cash are now asking extensions of the jobbers or giving good promises in lieu of checks. Very little spring farm work is done yet, the oat crop not planted, and although grain of all kinds is high, very little remains in the hands of the producers. A serious loss is felt in the sections through which the railroads run by that class of labor mainly supported by improvements on the tracks; the companies pursuing a rigidly economical policy. Many betterments already planned out and actually begun have been postponed for better times, and it is readily noted that the length and number of freight trains on the large lines compare very unfavorably with a year ago, not that the roads fail to make fair showings, but they are not making the proportionate increase that ought to be expected. The purchasing agents, like the merchants, are impressed with the idea to purchase nothing that can be done without. This cautious practice may benefit individuals and perhaps general business, being a sort of weeding out process, but it is beginning to tell severely on manufacturers. Furnaces, rolling mills and factories are all in good financial condition, or should be, owing to the past two years of prosperity, and if they would only shut up shop for awhile until the demand improves, or run on short time, so as to keep forces together, they would probably realize improvement much sooner than by present attempt to outlive one another. We are all aware that present production of Pig and Rolled Irons is not greater than a normal consumption would readily take up, but passing, as we are, through a season of reaction, caused by overstimulation, and followed by contraction in money centers, we are confronted by a depression in business just when our liveliest spring trade should be booming. Considering this, the jobbing trade is pretty good, buying for im-

mediate wants only being pursued by jobbers and customers, there being nothing in the outlook to justify prospective purchasing, consequently there is no life or snap to transactions. In the Pig-Metal business considerable diligence is shown by the sales agents, who fear a little accumulation at furnace yards. Manufacturers of Finished Iron seem a little more conservative, and, like the Cut Nail men, are fully aware that prices cannot go lower, except at a great loss. Barbed Wire is about the only respectable element among the staple goods at present. Wire Nails have lost all shadow of dignity in the fight with Cut Nails. The recent association decline in Bolts, while in keeping with other goods, has gained nothing for the manufacturers, but instead exposed their weak points. It is thought by some that the cut was but the beginning of a fatal fight with the factories outside the association.

Trade Items.

THE AMERICAN WRINGER CO. have been formed, with a capital stock of \$2,500,000, and have acquired the Metropolitan Mfg. Company, Middlefield, Conn.; Bailey Wringing Machine Company, Woonsocket, R. I.; F. F. Adams Company, Erie, Pa., and Empire Wringer Company, Auburn, N. Y. The business of these four companies will be continued under one management. The officers of the new organization are: Joseph Banigan, president; George Reuter, Jr., general manager. The following are the directors of the company: Joseph Banigan, president Bailey Wringing Machine Company, president Woonsocket Rubber Company, Providence, R. I.; R. C. Browning, president Metropolitan Mfg. Company, New York, N. Y.; Geo. Reuter, Jr., treasurer Bailey Wringing Machine Company, Woonsocket, R. I.; Lyman A. Mills, secretary Metropolitan Mfg. Company, Middlefield, Conn.; W. T. Farrar, treasurer F. F. Adams Company, Erie, Pa.; S. G. Beardsley, Jr., president Empire Wringer Company, Auburn, N. Y.; W. S. Granger, president Granger Foundry and Machine Company, Providence, R. I.; W. S. Ballou, general selling agent Woonsocket Rubber Company, Providence, R. I.

WE ARE REQUESTED to announce that the Wire-Nail Pencils, an illustration of which appeared in our issue of March 12, 1891, are manufactured by Greenough, Hopkins & Cushing, successors to the Cross Pen Company, Boston, for the Salem Wire Nail Company, Salem, Ohio, and are used by the latter company to advertise their business.

AS WILL BE SEEN by their Special Notice on another page, Haydock & Bissell, 12 Murray street and 15 Park place, New York, will have important auction sales on Wednesday and Thursday, April 8 and 9. On the former date a special sale of Granite Ironware Seconds, by order of the St. Louis Stamping Company, is announced. This is referred to as the last sale of Granite or Agate Ware this season. The assortment will be large, and it is stated that though some of the goods may be a little faulty in appearance, for general service they are as good as the first quality. On April 9 a large assortment of Nickel Trimmed Tea and Coffee Pots, Tin Tea and Coffee Pots, &c., manufactured by Manning, Bowman & Co., will be disposed of, as well as a desirable line of Saucepans and Kettles, Blue and White Ware, Stamped Tinware, Shelf Hardware, &c.

FOR SOME MONTHS past negotiations have been in progress looking toward a combination among five of the leading Tack manufacturers of New England, including Dunbar, Hobart & Co., Whitman,

Mass.; American Tack Company, Fair Haven, Mass.; Loring & Parks, Plymouth, Mass.; A. Field & Sons and the Taunton Tack Company, both of Taunton, Mass. The object of the combination will be to effect a saving in the cost of production by reducing expenses, and also to secure uniformity in prices, which have been greatly deranged by competition. While the arrangements have not all been completed for forming the proposed consolidation, it is reported that difficulties which have stood in the way of perfecting the organization are about to be removed, and there is some prospect that the project may be carried to a successful issue.

CHARLES WEILAND, 109 Bowery, New York City, will remove his Hardware and Cutlery business, May 1, to 143 Chambers street, where he will occupy the store and basement. This move will doubtless be advantageous, as it will increase his facilities for doing business, and will bring him nearer the center of the Hardware trade.

THE SHEPARD HARDWARE COMPANY, Buffalo, N. Y., are directing the attention of the export trade to the desirability of their goods in a neat and convenient catalogue recently issued for that purpose. This relates to their Ice-Cream Freezers, Fruit, Jelly and Lard Presses, Toy Cap Pistols, Mechanical Toys, small Iron Toys, Tinnery Stoves, Queen City Boiler, Gate Hinges and Latches, Blind Hinges, Frame Pulleys, &c. Several new styles of Toy Cap Pistols, Excelsior Iron Toys and Niagara Spring Hinge are also shown. A table for the ready converting of American currency into English money is also given.

WE ARE INDEBTED to Foster & Robertson, Portland, Ore., for a copy of "Portland Illustrated," a work of some 40 pages, giving Portland and its environments. The larger portion of the work is devoted, however, to views of the exterior and interior of the Portland Hotel. A full-page picture gives a view of the building occupied by Foster & Robertson for their wholesale Hardware establishment. The book is an extremely interesting one, and emphasizes the wonderful and substantial growth made in this city of the Pacific Slope.

FRANCIS CHENOWETH HARDWARE COMPANY, Birmingham, Ala., sole agents for the Birmingham Tack Works, which are not now in operation, issue a circular showing the stock of Tacks on hand which they are desirous of disposing of. From this circular it appears that the stock comprises a large assortment of the regular goods, both in papers and in bulk, including 2d Fine, Roofing, Basket, Trunk, Hungarian, Clout, &c., as well as other staple goods. We are not informed in regard to the prices at which the stock is offered, but presume that the opportunity is deserving the attention of the trade.

OUR ATTENTION has been called to the fact that a line of Butcher Knives branded "W. W. Wilson" is made in this country, and we are desired to state by Hermann Boker & Co., New York, agents for John Wilson, Sheffield, that these goods have no connection with the John Wilson Butcher Knives well known to the trade.

IN THEIR PAGE ADVERTISEMENT in another part of this issue Landers, Frary & Clark, New Britain, Conn., and 298 Broadway, New York, illustrate their line of Ivory Antique Table Cutlery, which is referred to as a perfect imitation of old ivory and guaranteed not to break or crack. They call attention to the fact that their line of Table Cutlery covers a wide range from the cheapest to the most expensive goods. It is satisfactorily represented in their Cutlery catalogue, which they will be glad to send on application.

CONGRATULATIONS are to be extended to W. Bingham Company, Cleveland, Ohio, on the completion of 50 years' business activity and growth, their connection with the Hardware trade dating from April 2, 1841, when W. Bingham & Co. purchased the stock of Clark & Murfey. Announcement of the completion of the first half century of their existence is made by the company in an appropriate and graceful circular of unique and effective design, bearing a *fac-simile* of their advertisement in a paper of that date. In addition to the high position gained and occupied by the house, it is a matter of special congratulation that the founder of the business is still at its head, and to him and the younger men associated with him the trade will unite in kindest greeting and congratulation, and best wishes for coming years.

S. A. HAINES, of the S. A. Haines Company, 90 Chambers street, New York, leaves on April 6 for a trip through the West which will also cover the Pacific Coast.

SCHULTE, LOHOFF & Co., manufacturers of Edge Tools, Evansville, Ind., have appointed the S. A. Haines Company, 90 Chambers street, New York, their direct representatives. Samples of these Tools, which are coming into increased prominence, can always be seen at the agents' offices and the prices asked will be those of the factory.

AT A MEETING held April 1, 1891, at the Hardware Board of Trade rooms, the following preamble and resolutions in respect to the death of Augustus Schoverling, were adopted by a committee consisting of A. H. Saxton, J. H. Lau and W. M. Calhoun:

Whereas, it has pleased Almighty God to remove from this life our friend and fellow merchant, Augustus Schoverling, and

Whereas, our late friend stood high among his business associates as an honorable and upright man; be it therefore

Resolved, that in his demise the trade loses a valuable member, and his friends a worthy associate;

Resolved, that we extend to his afflicted family our sympathy and condolence in this hour of their great grief;

Resolved, that a copy of the foregoing resolutions be presented to his family, and also to the surviving members of his firm.

Our readers will observe under the head Obituary on another page an announcement of Mr. Schoverling's death, and a reference to his business career and the respect in which he was held.

FRANCIS J. P. TOMMINS of the late firm of Tommins & Adams announces under date of March 23 that he has added some important agencies to the number of manufacturers he is representing to the export trade, and desirous of securing larger premises for the transaction of his increased business, he has removed to 11 Murray street, New York. Illustrated catalogues and price-lists of the lines represented by him will be forwarded upon request.

A. J. JORDAN, manufacturer of the well-known AAA Cutlery, with warehouse and store in St. Louis and factory at Sheffield, sails from New York for Sheffield to-day (Thursday), on the steamship City of Paris. Mr. Jordan has been in St. Louis for the past three months and does not expect to return much before the end of the year.

THE TRADE WILL OBSERVE the advertisement on the inside of the last cover page, in which W. & E. T. Fitch, New Haven, Conn., call attention to their Harness Snaps, with illustration of the Union Patent Bolt Snap.

COLBY WRINGER COMPANY, Montpelier, Vt., refer to the fact that notwithstanding business in general is a little slack they can report a gain over the figures of a year ago.

They have recently made shipments to Seattle, Wash., Australia, Newfoundland, Germany and Switzerland. They refer to the fact that cheap imitations have been made of their Wringer in foreign countries, but add that their customers say that their make is insisted upon, the export demand being satisfactory. In their advertisement on another page they call attention to their exceedingly effective pamphlet, "Facts Wrung out and Hung on a Line," which illustrates some of the special features of their Wringers. In addition to those it will be of interest as an ingenious and effective piece of advertising matter.

IN THEIR ADVERTISEMENT occupying another page the Chapman Mfg. Company, Meriden, Conn., give a number of illustrations of some of their leading goods in their Dog Collar and Tennis Belt department. It will be observed that some new patterns are thus brought to the attention of the trade.

Trade Topics.

WE ARE IN RECEIPT of the following communication from a prominent jobbing house and take pleasure in giving it place in our columns. Many of our readers can doubtless sympathize with them in the matter of which they write:

We are very much pestered by inquiries concerning the standing of various individuals or concerns by reason of the fact that the one who makes the inquiry—

1. Often does not send any stamp or stamped envelope.

2. If he sends a stamp it is glued or pasted on a moist sheet so as to be almost unavailable.

3. Does not show on his letter head or envelope the nature of his business.

This latter is a common fault most often committed by firms of reputation and magnitude, although it is hardly to be supposed that confidential information, such as the standing of a customer, will be imparted to a third person until that person comes well introduced.

We had occasion to remonstrate with one of these gentlemen not long since, when he informed us by return mail that we could easily enough have seen the nature of his business by referring to Dun or Bradstreet. We could just as well have replied that he could see there likewise the standing of his proposed customer, but being averse to unprofitable controversy we forebore.

Will you not call attention to this matter and permit us to suggest that all inquiries for information of a confidential nature should carry with them the information which any one would want—viz., that is of the inquirer's business.

A Salesman's View Of It.

"I'M DEAD TIRED of the load we fellows have to carry," said a crack salesman in our hearing. "We are accused of getting up all sorts of excuses, so that we can convince the house that it is desirable or necessary to cut prices. When our firm are accused by their competitors of having set the pace a little too swift on the down grade, it is a mighty convenient thing to lay it on the backs of the salesmen who are not there to speak for themselves. Why, I know that my own firm often give me credit for setting up a job on them, so that I can get special rates for a favorite customer. Perhaps I may do something of that kind once in a while, but it can't

hold a candle to the cold-blooded, deliberate way in which members of the firm will not only once in a while, but often, cut their own prices when there isn't anything to be gained by it at all. You can't blame a salesman for trying to make himself solid with his best customers by securing for them the best treatment his house will grant. That's not only human nature, but it's a salesman's best trait. He ties customers to him and to the house. But the firm; why, they cut for any sort of a buyer, whether his trade is worth having or not. Take a case in point. A while back I got into a jangle over some mixed-up shipments to a two-penny firm down at Mosquitoville. After a good deal of correspondence and no satisfaction to either party, one of the firm took a jaunt down to see the kicker, who was but a small buyer with only a limited credit, so that all the boys fought shy of selling him much of a bill, and when they did they took mighty good care to make him pay top prices. Well, when our high muck-a-muck went down to see him to settle the fuss, he not only granted everything that chap wanted, but sold him another bill, bigger than the house had ever booked in that direction before. I was nearly paralyzed on my next trip down there when my man showed me with a chuckle how well he had fared. The firm didn't give it away to me. Oh, no! I had been barely informed that the old trouble was adjusted and that the merchant in question had ordered some more goods to show his esteem for the house. Well, I was flabbergasted when I learned the facts. And the joke of it was that the member of our firm who sold the goods knew and was thoroughly conscious of what he was doing, for he cautioned the merchant not to tell me how well he had been treated. But he couldn't keep it to himself. Now that man is spoiled. He always wants to buy direct from the firm. He is through with traveling men, he says. I could go on giving you a lot more of just such freaks, but I guess I have said enough."

Cycles.

WE CONTINUE below the review of the Cycle market, giving information in regard to machines made by other manufacturers besides those mentioned in our last issue. It will be observed that the goods of some of the most prominent makers are brought to the attention of the trade. From the wide range of patterns merchants who are handling or intending to handle this line should be able to obtain suitable goods, and to make desirable business arrangements as to terms of sale, &c.

GEORGE N. PIERCE & Co., Buffalo, N. Y., are preparing for the season of 1891 the

Queen City Safety,
Queen City Tricycle.

The Queen City Safety has a steel drop frame, with a plated cross bar, easily detached, to make it equally desirable for boys or girls. The 20-inch wheels are made with steel crescent rims, nickel-plated hubs and 28 nipple spokes, which,

it is stated, can be easily tightened or replaced, if damaged or broken. The head and crank shaft are brazed to the frame, cone bearings, adjustable steering head, steel mud guards, direct plunger brake, nickel-plated adjustable chain, spring seat, tool bag, &c. This machine is not being put on the market as a cheap machine, but the manufacturers claim that it is strong and substantially built, embodying perfect lines of beauty. Another machine of the same name with 30-inch wheels, with full ball bearings and other improvements, is in course of preparation. The Queen Tricycles are made in five styles, including a tandem machine, each style being made in various sizes.

THE STOVER BICYCLE MFG. COMPANY, Freeport, Ill., will have on the market for 1891 two high-grade safeties,

Paragon,
Iroquois.

The Paragon will be fitted with tangent spokes, a new handle bar, soft rubber handles of their own design; a new saddle, which they think will be a surprise to all, as they consider it about perfect. The machine will be a little lighter than last year, and will be furnished with $\frac{1}{2}$ and $\frac{3}{4}$ red rubber tires. The weight is less than 50 pounds. The Iroquois will be built the same as last year with $\frac{1}{2}$ and $\frac{3}{4}$ tires, direct spokes, &c. It will be lightened a little, and will be even prepared to take its place as a stanch roadster. They will furnish the Iroquois with cushion tires and will try to meet the demand for the new anti-vibratory device, though it will, no doubt, be large. This will be marketed as a first-class stiff-frame machine.

THE ST. NICHOLAS MFG. COMPANY, Chicago, are introducing a new and improved high-grade safety machine which will be known as the

Record.

The frame of the diamond-shape pattern is comparatively rigid, so that by removing the brace between the head and seat post the machine becomes suitable for ladies' use. The manufacturers claim that there is nothing but the very best material used in its construction. It has double tangent spokes, solid steel link pattern chain, direct steering sloping post, curved front forks, detachable coasters, socket, ball bearing steering head, front wheel pull-up plunger brake, improved saddle, and is made with solid or cushion tires.

THE KENWOOD MFG. COMPANY, Chicago, are putting the

Kenwood Bicycles

on the market for the coming season. The gentlemen's wheel is made with quadrant frame, and those for ladies in two styles of U frame. These safety machines are all made with solid or cushion tires, rear wheel brake, rigid or spring forks, ball bearings throughout. The spring fork is adjustable so suit the taste of the rider and is provided with a ball bearing joint. The ball bearing joint is intended to prevent the front wheels from striking the fork sides. The company have retained the direct spoke and solid rim construction, but are prepared, however, to fit Bicycles with tangent spokes and hollow rims if specially ordered.

THE POPE MFG. COMPANY, Boston, are putting their Columbia Bicycles on the market for 1891. The

Columbia Light Roadster Safety,
Columbia Ladies' Safety,
Expert Columbia,
Columbia Light Roadster,
Volunteer Columbia,
Columbia Semi-Roadster,
Columbia Racing Safety,

Columbia Racer.

Columbia Tandem Tricycle.

The Columbia Racing Safety is fitted with solid or pneumatic tire, as desired. Improvements are noticed in their leading machines, among which may be mentioned the double diamond frame of the Columbia Light Roadster Safety; also the driving gear used on the same machine. The manufacturers state that while their prices are for the most part the same as last year, they are actually considerably lower, in that they offer more for the money, as their leading machines are better and they cost more to construct. An invitation is extended to all to visit their factory and see how they make Columbia Bicycles.

SINGER & Co., Coventry, England, and Boston, Mass., will have the following Wheels on the market for 1891:

Miniature.
Intermediate.
Apollo.
Special Apollo.
Singer.
Special Singer.
Royal Singer.
Singer Spring Fork.
Ladies' Singer.
Singer Tandem Safety.
Challenge Bicycle.
Apollo Bicycle.
Miniature Tricycle.
Cycle Valise and Luggage Carrier.
Straight-Steerer No. 3 Tricycle.
Special S. S. S. Tricycle.
Singer Tandem.
Singer Carrier.
Singer's Velociman.

This line of Cycles presents a large variety of styles in Safeties, Ordinarys, Tricycles and Tandems. The Safeties, with the exception of Miniatures and Intermediates, are made with both cushion and pneumatic tires. The Special and Royal Singers are new machines for 1891. The Singer and Ladies' Singer are revised patterns for the coming season. Specialties for 1891 are referred to under the general head of Singer, as the Singer Ball Steering Head, Steering Lock, Spring Fork, Detachable Crank Bracket, Axle, Tandem Steering, &c.

BROWN BROS. MFG. COMPANY, Chicago, will have for the coming season a line of Bicycles under the general name of

Greyhound.

In making this machine they have endeavored to combine strength, lightness and beauty of design. They are made in Safeties, No. 1, for both gentlemen and ladies; No. 2, for gentlemen, and also in a style for either gentlemen or ladies; and in cushioned tire. They furnish cushioned tire for any of their machines when so ordered. The manufacturers state that their wheels in every detail are thoroughly well made and will bear the closest examination, both as to material used and grade of work.

WARWICK CYCLE COMPANY, Springfield, Mass., will have on the market for the coming season the

New Warwick Safety,
Ladies' Warwick Perfection Safety,
Warwick Perfection Ordinary.

The two machines first mentioned were fully described in an illustrated article in *The Iron Age* of January 29, 1891. The claim made by the manufacturers for the construction of the Warwick Safety is that it is made of cold-drawn weldless steel tubing, having hollow rim with thickened base of Swedish steel, hubs,

fork head, sprocket wheels, cranks, &c., of high grade dropped forgings, dust-proof ball bearings and tangent spokes. In the Ladies' Perfection the same general plan of construction is followed, and the same class of materials used, but having the special features demanded for lady riders. The Warwick Perfection Ordinary has adjustable Warwick ball bearing to both wheels, adjustable saddle, anti-vibratory spring to front forks, &c.

UNION CYCLE MFG. COMPANY, Highlandville, Mass., are introducing for the season 1891 their line of

Union Safety Cycles

in Nos. 9, 10, 12 and 13. The No. 9 is described as a stanch roadster for all-round road riding. The No. 10 is for ladies or gentlemen. No. 12 is a gentleman's machine and No. 13 a strictly ladies' wheel. The Nos. 12 and 13 Bicycles are entirely new this season, and embody an improved application of the spring frame. At the bottom of the side tubes is an auxiliary fork through which vibration is communicated from the wheel to a coiled spring at the upper end, thus relieving the main body of the Bicycle from the incessant jar and strain attendant upon road riding. The same arrangement is applied to the rear frame and acts in precisely the same manner. Another claimed improvement is a 10-inch closed ball steering head, the balls working perfectly free in the socket, yet arranged so they cannot fall out. Attention is called to their light and easily adjusted saddle and a direct acting brake of great power. The wheels are both 30 inches. The No. 13 differs from the No. 12 only in matters which essentially belong to a ladies' wheel. No. 12 weighs 44 pounds, and the 13 weighs 40 pounds. These wheels are put upon the market as being finished in the best possible style.

THE ORMONDE CYCLE COMPANY, London, England, Aquila B. Rich & Co., 1790 Broadway, New York, importers, will have on the market for the coming season the

Ormonde Roadster,
Ormonde Light Roadster,
Ormonde Road Racer,
Ormonde Racer,
Boy's Ormonde,
Our Diamond.

A new feature of their machines this year is their cushion tire. All their wheels are being fitted with this new anti-vibrator. The parts of the machines are perfectly interchangeable, so defective or broken parts may be replaced. On the special Ormondes the chain wheel is placed between the bearings, which are firmly braced, intended to equalize the strain and give steadiness in action and satisfactory durability. The Ormonde Racer weighs from 20 to 26 pounds. This is made on the same principle as the Roadster and Light Roadster, but with lighter tubing. The frame of the Racer is made by lapping tubes throughout instead of using solid joints.

STERLING ELLIOTT, Newton, Mass., will continue the manufacture of his

Hickory Safety Bicycle

for the season of 1891 without change in its construction. It can be used by either gentlemen or ladies without alteration. The hubs of the wheels are of rock elm, while the spokes and rims are hickory. The rubber tire is fastened to the rim by a steel ribbon, the ends of which are secured to the inside of the rim. This machine weighs 42 pounds. Another machine is in course of preparation, having ball bearings, and will be finished in natural wood and nickel. The manufacturer refers to the life of hickory vehicle wheels

in support of his claim as to the superiority of this material for this purpose.

BANKER & CAMPBELL COMPANY, 12 Murray street, New York, are manufacturing for the season 1891,

The Meteor Safety,
Ladies' Meteor.

The Meteor Safety has a frame of weldless steel tubing throughout; adjustable ball throughout, including steering head; direct twin spokes, and is put on the market as a high-grade machine. These are fitted with either solid, pneumatic or cushion tires. The Ladies' Meteor is designed especially for ladies' use. The frame is brought down to a level with the crank axle, and so constructed that a lady will have ample room for mounting and dismounting, and is of such pattern as to give greatest strength with the least weight. The chain and rear wheel are covered with a very light and simple guard, and being of leather cannot rattle or become loose, and is detached without the use of wrench or screw driver. These are geared 49 to 52 inches, as desired.

H. A. LOZIER & CO., 340 Superior street, Cleveland, Ohio, who control the entire output of the Lozier & Yost Bicycle Mfg. Company, have on the market for 1891 three Safeties,

The Giant,
The Giantess,
The Little Giant.

The Giant has a cold-drawn weldless steel tube backbone, ball bearing steering head, pedals, crank and shaft. Prominent features of the wheel are the Bolte spring fork, section steering head, chain adjustment and Yost saddle. The Giantess is made on the same general lines as the Giant, having, however, skirt guard and extra mud guard. The Little Giant is designed for boys and girls. The manufacturers state that the Little Giant of '91 is the same machine in matter of genuine worth, and presents an outline equally graceful is clothed with the same ornamental and carefully finished raiment, and has besides many marked improvements. This wheel has the Bolte spring fork and Yost saddle. It is made with and without ball bearings.

Price-Lists, Circulars, &c.

THE ADAMS & WESTLAKE COMPANY, Chicago and 115 Broadway, New York: The Excelsior Door Holder, Water Coolers, Cooler Stands and Drainers, Sprinkler Roses, Tin Sieves, Royal Sifters, Oil Cans, Cuspidors, Iron Measures, Copper Measuring Funnels, Bathtubs, Arc Safety Lamp, &c.

STUTZ & WALKER, Goshen, Ind.: Fine Carriages, Road Wagons, Buckboards and Carts, Double Center Spring Buggy, Jump-Seat Surrey, Goshen Phaeton, Driving Wagon, Buck Wagon, &c.

THE STEWART IRON WORKS, Wichita, Kan.: Iron Fence, Cresting and Lawn Ornaments, Iron and Steel Jails and Cages, Architectural Iron Work, Structural Iron Work, &c. Their Catalogue No. 21, containing 75 pages, is fully illustrated, and is accompanied by a price-list No. 33.

JOSEPH LAY & CO., Ridgeville Ind.: Brooms and Brushes, Rattan, Brass and Steel Wire Push Brooms, Molders' and Casting Brushes. Rattan mixed, all Broom Corn, all Rattan, Hickory Splint Brooms, &c. Twisted Spiral Brushes, Iron Covered Steel Brooms, Horse, Scrub, Keg, Counter, Bench and Dusting Brushes, &c. A price-list accompanies their 1891 catalogue.

THE STORM MFG. COMPANY, Newark, N. J.: Dumb Waiters and Hardware specialties. Illustrations are given of the New York Safety, Manhattan, Improved Humphrey, Improved Hand Power and

Carriage Elevators. Also Cannon's Diamond Nail Set, Lightning Adjustable Wrench, Ives' Patent Door Bolts and Sash Locks, &c.

HARBER BROS., Bloomington, Ill.: Buggies, Carriages, Surreys, Road Carts, Farm and Spring Wagons, Agricultural Implements, Bob Sleds, Bicycles, &c. These goods are shown in large variety, and in different grades.

GEORGE WHEELER, Norwich N. Y.: Stepladders, Flower Stands, Clothes Dryers, Work Tables, Ironing Tables and Lifting Jacks. The manufacturer states that he is prepared to furnish these goods on short notice and at the very lowest price.

TORRANCE & CO., Troy, N. Y.: Malleable Castings and Light Gray Iron. Stove Turn Keys, Hinge Pins, Tin Closet Door Trimmings, Turn-key Latches, Ash-Sifter Handles, Ash-Pan Ears, Ash-Pan Handles, Shakers, Cover Lifters, Pokers, Adjustable Snap Flask Trimmings, Conductor Hooks, Milk-Can Handles, Cup Handles, Sad-Iron Stands, Cake Pans, &c.

THE WM. CABBLE EXCELSIOR WIRE MFG. COMPANY, Brooklyn and 43 Fulton street, New York: Fourdrinier Wires, Cylinder Molds, Dandy Rolls, all kinds of Brass, Copper and Iron Wire, and Brass, Copper and Iron Wire Cloth, Bank, Office and Counter Railing, Antique Brass and Bronze Grilles, Nursery and other Window Guards for store fronts, &c.

BLACKMER & POST, St. Louis, Mo.: Vitrified Sewer and Culvert pipe. Their Standard Sewer Pipe is made from 3 to 24 inches in diameter, for city Sewers and Drains. Their Culvert Pipes are referred to as double strength, in 2½ foot lengths with Improved Sockets, the sockets being much deeper than are found on ordinary Sewer Pipe. They are also made thicker and heavier to sustain the external pressure under railroad embankments and the internal pressure in water works conduits.

OSGOOD & THOMPSON, Binghamton, N. Y.: U. S. Standard Scales, Combination wagon scales, Union, Portable Platform, Railroad Depot, Dormant Warehouse, Dormant Hopper, Coal Dealers', Miners' and Transportation Scales. Also Store and Warehouse Trucks. They advise us that though they make a nice line of Portable Scales, their special business is the manufacturing of Wagon Scales of 3.4 and 5 tons capacity, under the Osgood patent. These scales, they state, have now been on the market for 12 years and have been fully tested in every point, and have stood that test successfully. They are referred to as being specially adapted to the hardware trade, being very small in bulk, the 5 ton scale weighing but about 150 pounds ready for shipment; and can be handled with the regular line of Hardware and agricultural implements. A discount card accompanies their catalogue.

L. L. LORD, Meadville, Pa.: Plumbers' Gas and Steam Fitters' Tools and Specialties. An extensive line of these goods are illustrated on a large circular and net prices given. It is stated that these prices are absolutely net and are subject to no discount whatever.

JESSE LEE & SONS, Philadelphia, Pa.: Summer Horse Clothing, Lap Covers, Fly Nets, Keystone Gail Spreader, Jacquard Panel Dusters, Clippers for horsemen and barbers, both Star and Diamond brand. It is stated that every Clipper is carefully examined and tested, and is known to cut perfectly when sold. Their business is exclusively wholesale. Orders from consumers will be declined.

CHICAGO SPRING BUTT COMPANY, Chicago, and 97 Chambers street, New York: Spring Hinges, Scranton Door Hangers and Hardware specialties. The color of labels on their boxes designates the goods thus: Pink, Japanned Goods; blue, Japanned Nickel Spring; yellow, Nickel Plated; red, Bronze Plated, white, Bronze Metal, and green, Opal Bronzed. Accompanying the catalogue is a calendar,

with an adjustable arm to point to any required date. Above the calendar leaves is a price-list of Chicago Double-Acting Spring Butts.

R. ARMINGER & SON, Baltimore, Md.: Refrigerators. Sterling, Climax, Buffet, Monarch, Imperial, Princess, Regal, Victor, Daisy, Beauty, Charm, Alpine, Horizontal and Chest Refrigerators are shown in various styles and sizes. These goods are made in solid oak, solid walnut, and of soft woods grained in imitation of hard wood, and are referred to as being made of well-seasoned material and finished in a superior manner.

RIDGWAY REFRIGERATOR MFG. COMPANY, Philadelphia, Pa.: Refrigerator Cars, Cold Storage Buildings, Ice Houses and Portable Refrigerators. The Ridgway system of refrigeration, as described, consists in passing the drip water through V shaped metallic troughs forward and backward, until discharged through a trap at the bottom, the cooling properties of the drip water being thus utilized for additionally cooling the air. It is claimed that as the moisture contains all, or nearly all, the impurities in the atmosphere, they are also carried off by the drip water, and in this way the confined air is cooled, dried and purified at each revolution before coming again in contact with the food, as long as the supply of ice is maintained.

My Waste Basket.

BY M. I. SHADOW.

IT WAS a rainy March day at the store. There are days when it rains, and rainy days. This was one of these. Albert, my head man, was in the tin shop, holding furnace-pipe elbows while the tinner peined them down. This left Phillip and I alone in the store, or should have left us there. When I looked up from my books, which I was posting, for Philip, he was nowhere to be seen. Philip is a boy who has lately started in under my guidance to learn the Hardware business. What he will accomplish in this direction remains to be seen. He has his peculiarities, this boy Philip has. He is often found in the wareroom, sitting on a Nail keg, with his face in his hands and his elbows on his knees, gazing into vacancy with an intensity worthy of great thoughts. He is of American parentage, but when recalled to a realization of the present, excuses himself by saying he was having a dream in German. He is not particularly neat either in dress or work, and has a faculty for putting surplus Rivets or Washers, when weighing them, back into the wrong bin. This peculiarity also extends to Nails, Screws, &c. Finding him gone, I remembered that some time before I had sent him to empty my waste basket, which was full to overflowing with circulars, the accumulation of a week or more. These were to be thrown on the pile of scrap tin in the back yard, and he should have been back sorting a mixed box of Fish Hooks. I had called him away from this interesting work to empty the basket. So I started out through the wareroom to find him. There he was sitting on the floor, surrounded by little piles of circulars, each held down by a Horse-shoe. When he saw me coming he cried out: "Say, mister, I've got a picnic!" He has an aggravating way of always calling me "Mister" instead of "Mr. Shadow." I have frequently suggested a

change in his manner of addressing me, but to no purpose. He had evidently been taking account of stock, as I saw from a memorandum which he had made on the back of a couple of old envelopes. In answer to my question of what he was doing, he explained that he started out to see if he could find any lottery circulars; thought there might be one among so many papers, and, as his curiosity was excited, decided to find out what different kinds of circulars were sent to a Hardware merchant. He had made a list of the goods to which the circulars related, and I must confess I became quite interested in looking over the list he had made, which I will give in full: Agricultural Implements of all known varieties, Harrows, however, predominating; Paint, Oils, Whips, Lime, Plaster, Hair, Bicycles, Stoves and Ranges, Binder Twine, Furniture, Tinware, Rubber Goods, Portable Houses, Polish for furniture, Refrigerators, Carriages, Hair Renewer, Oil Cans, Hose Goods, Scales, Paper, Safes, Lawn Mowers, Wood Tubing, Cash Registers, Churns, Creamery Goods, Cigars, Grenades, Axle Washers, Belting, Stove-Pipe Shelves, Tinner Tools, Wire Fence, Handcarts, Wire Stretchers, Varnish, Iron Age Price Books, Stable Fixtures, Windmills, Iron Roofing, Tin Plate, Hollow Ware, Cane Machinery, Revolving Fans, Horse Collars, commission merchants' inducements, Beer Pumps, Wagon Bows and Covers, Machinery, Sewing Machines, Typewriters, Nails, Harness Oils, Soap, Grindstones, Wall Paper, life insurance, Pillow-Sham Holders, patent solicitors, Window Screens, and Office Specialties.

He had got about two-thirds of the way to the bottom of the basket, and I informed him that he had carried his picnic far enough. I suppose I am only one among thousands of Hardware men who get a like amount and like assortment of circulars. These, Philip informed me, came from every State in the Union that he had ever heard of, and he knew them frontward and backward. I went back to my posting after starting Philip at his Fish Hooks again, and wondered whether others gave any more attention to miscellaneous printed matter than I did. And I could not help thinking that the manufacturers who sent out the circulars took about as much pleasure in wasting their printed matter as Philip does in wasting his time. Don't they say something about the boy being father to the man? Perhaps Philip will be a manufacturer one of these days.

It Is Reported—

That the store of Charles Hummell & Son, San Antonio, Texas, was burglarized on March 19, and \$400 worth of fine Guns and Pistols stolen. No clue to the thieves has yet been discovered.

That Perry Bros., dealers in Hardware, Melrose, Mass., have added Bicycles to their stock, and have leased quarters adjoining their establishment for the sale of new and second hand machines. Special attention will also be given to repairs.

That Richard Herrick has embarked in the Hardware business at Gloucester, Mass.

That O'Connor & Grandy, dealers in Lumber, &c., St. Thomas, N. D., have purchased the Hardware business of O'Connor Bros., at the same point, and will continue it in connection with their former lines.

That Arthur Doig is opening a Hardware store at Russell, Mass.

That Gabriel & Co. have established a new Hardware store at Milford Center, Ohio.

That Adolph Glaser will soon engage in the Hardware business at Mexico, Mo.

That Fred. Kleinan will hereafter conduct the business formerly carried on by Harms & Kleinan, dealers in Hardware, Implements, &c., Flanagan, Ill., having purchased his partner's interest.

That George M. Dayton will conduct a new Hardware store at Port Huron, Mich.

That the Helena Hardware Company are erecting a new store for their business at Helena, Mont.

That Church & Madison have succeeded the firm of Church & Campbell, Bridgewater, Iowa.

That M. F. Frankenberg, Hardware, &c., Uniontown, Pa., has disposed of his business to Hoffman & Husteed.

That J. B. Gatland is a new Hardware merchant at Mt. Sterling, Ohio.

That C. M. Norton has bought out the Hardware business of G. E. Breek & Co., at Lansing, Mich.

That Marsh & Uhlig will open a new Hardware store at Minden, Neb.

That Simpson, Boyne & Co. have succeeded the Hardware firm of Woodcock & Simpson, Corvallis, Ore.

That Wall & Worden, Hardware merchants, Oxford, Wis., have dissolved partnership. The former will continue the business.

That A. Elliott, dealer in Hardware, Glenwood, Iowa, has sold out to A. Simons.

That Pierce & Littlefield, Big Rapids, Mich., have dissolved partnership in the Hardware business, the latter retiring. Mr. Pierce will continue the business.

That R. A. Hollenberg will open a new Hardware store at Irving, Kan.

That J. M. Metzgar will soon open a Hardware store at Mohawk, N. Y.

That C. F. Shuman, Hardware, Stockwell, Ind., has sold out to R. B. Arnold.

That M. Nussbaum has sold his interest in the Macon Hardware Company, Macon, Ga., to Messrs. Ross & White.

That J. H. Waterman & Co., Newport, N. Y., Hardware, Stoves, &c., have dissolved partnership.

That G. W. Fiske, Hardware, Hudson, Mass., has disposed of his business to Holden & Robinson, also of Hudson.

That J. Andrew has opened a Hardware store at Livingston, Wis.

That Leon & Morris are a new Hardware firm at Amboy, Ill.

That Hodges & Allen are a new Hardware firm at Russell, Pa.

That Hiram Ellis has purchased the Hardware, Gun and Implement business of Henry Sharp, Arkport, N. Y.

That A. Crandall and J. McCollum have formed a copartnership in the Hardware business at Greenwich, N. Y.

That O. F. Winkleman & Co. have succeeded W. M. Ogilvie, dealer in Hardware, &c., Orlando, Fla.

That J. K. Hall will open a new Hardware store at Columbia, Pa.

That Geo. M. Dayton has purchased the Hardware business of F. S. Bagg, Port Huron, Mich.

That Thomas Lount is the proprietor of a new Hardware emporium at Kenockee, Mich.

That Isaac Atkins has bought a half interest in D. F. Slade's Hardware establishment at Worcester N. Y.

That burglars entered Wichtel & Krielle's Hardware store at Pender, Neb., on the 22 ult. The booty secured was of little value.

That the Bee Hive Hardware Company, Dillon, Mon., have been incorporated. The incorporators are E. T. Raug, F. W. Schenk and M. M. Schenk.

Advertising Methods.

MASON REGULATOR COMPANY, Boston, sent out with an Easter greeting, something which is certainly a novelty in its way. Within a circular pasteboard box about 4 inches in diameter and covered with canary-colored cotton, is a fresh laid egg. This is attached to hay in the bottom of the box, and is accompanied by a card, on which is printed a fresh egg: "Compliments of Mason Regulator Company, Boston, Mass., crack it and see." Upon cracking the shell, we find a piece of thin, yolk-colored paper, upon which is printed—

"Tell me, I pray thee,
Ye learned men,
Which was the first,
The egg or the hen?"

THE YOLK OF IT IS THIS:

300 years ago,—A. D. 1492—Christopher Columbus illustrated the discovery of America by an egg.

A. D. 1891 we employ the egg to call your attention to the fact that there have been no greater discoveries since the days of Columbus than those of the

Reducing Valves
Air Brake Regulators
Damper Regulators

MANUFACTURED BY THE

MASON REGULATOR CO., Boston.

The conception of this advertisement is so unique, and the matter is presented in such a dainty manner, that the Mason Regulator Company and their products cannot fail to be impressed upon the mind of the favored recipient.

Exports.

PER SHIP SAMARIA (CONTINUED), MARCH 21,
1891, FOR SYDNEY, N. S. W.

By R. W. Forbes & Son.—21 packages of Household Utensils, 2 packages Carriage Hardware, 3 packages Builders' Hardware, 2 packages Carriage Hardware, 3 cases Carriage Hardware, 4 cases Carriage Hardware, 1 case Hardware, 20 pounds Packing, 4 packages Builders' Hardware, 9 cases Agricultural Implements.

By Strong & Troubridge.—8 dozen Stamped Ware, $\frac{1}{2}$ gross Tinware, 3 gross Hardware, 110 Wrenches, 18 dozen Apple Parers, 3 dozen Hardware, 1 box Planes, 12 dozen Axes, 40 pounds Stone, 18 pounds and 2 dozen Hardware, 134,000 Bolts, 4 dozen Axes, 2 dozen Axes and Hatchets.

By R. W. Cameron & Co.—418 pounds Hammers, 3 boxes Belting, 3 dozen Hammers, 1 dozen Braces, 4 gross Shears, 3 cases Wood-Working Machinery, 1020 pounds Nails, 10 dozen Hoes, 5 gross Pocket Lamps, 1 box Brushes, 312 dozen Lampware, 6 Wheelbarrows, 1005 pounds Flint Paper, 12 Locks, 7520 pounds Locks.

PER BARK WM. PHILLIPS, MARCH 23, 1891, FOR
CAPE TOWN, SOUTH AFRICA.

By Hartley & Graham.—1000 Metallic Cartridges, 2000 Primers, 3500 Cartridges.

By Healy & Earl.—20 Mowers.
By W. B. Fox & Bro.—1350 pounds Agricultural Implements.
By H. W. Peabody & Co.—429 packages Harvesting Machinery, 1 case Drills.
By Arkell & Douglas.—12 dozen Traps.
By R. W. Forbes & Son.—85 kegs Nails, 7 dozen Axes, 52 packages Agricultural Goods.
By W. H. Crossman & Bro.—20 dozen Hardware, 2952 pounds Sisal Rope, 10,000 pounds Nails.
By Coombs, Crosby & Eddy.—3 dozen Edge Tools, 2 gross Polish, 7 pieces Plated Ware, 7 dozen Bird Cages, 2 Corn Mills, 6½ dozen Hardware, 1 dozen Wheelbarrows.
By Strong & Troubridge.—6 dozen Wrenches, 12 dozen Locks, 2 dozen Brushes, 1 dozen Carpet Sweepers, 1 dozen Curry Combs.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The general movement has been of fairly liberal proportions, and, with some few unimportant exceptions, values are marked by an undecrease of firmness more conspicuous, if anything, than that which characterized the markets a week ago. Cost of crude materials is prominent as a factor governing prices for several commodities, but the character of the general distribution plays a more prominent part and imparts stability to the improvement that has taken place during the past 30 days. Prospects for the immediate future are considered favorable not only for firmness in values, but for a good movement of all of the more staple lines of Paints and Oils.

White Lead.—From both the near by and the out of town trade there has been a good, steady demand for pure pigment, and the distribution by jobbers, as well as the deliveries by corrodors, are represented as having been the largest for any week since the opening of the spring season. The movement in mixed Leads has also been on a liberal scale, with improvement particularly noticeable in the instance of the better class of Lead-Zinc compounds. With the consumption thus liberal and the markets for crude materials quite strong, prices remain firm throughout.

Zincs.—The market for American Oxide remains in strong position. With all the producers employed the output latterly has been closely absorbed, and now that the Passaic works, which were destroyed by fire, are no longer contributing, the difficulty in securing supplies from first hands for early delivery is more pronounced. Foreign brands are coming along in fairly liberal quantities, but the arrivals do not appear to be in excess of trade requirements, and prices for these, as well as for domestic product, remain very firm.

Red Lead and Litharge.—The movement of these pigments has been fairly liberal, and the position of the market is strong, there being hardly the average accumulation in corrodors' hands, while consumption continues on a quite large scale.

Colors.—No important changes have taken place in prices of any line of Dry or Oil Colors, and the market is without distinctively new feature. Contracts for grinders' supplies do not appear to have been as large as during the preceding week, yet of very good volume, but the distribution of house-painters' Colors has increased and is fairly active at the present time. Ready-mixed Paints have been quite active also, and a good trade in Metallic Paints is also reported.

Miscellaneous.—Prices for Block Chalk continue high, in the absence of addition to the supply here and light offering for future delivery. Whiting has had quite free movement, but manufacturers are filling orders at old prices. There is a

steady movement in Paris White at former quotations. Barytes, Terra Alba, Talc and China Clay are steady at last week's prices and in very good demand.

Oils and Turpentine.

Lined Oil.—City crushers have made an advance of 1¢ $\frac{1}{2}$ gallon in the price of Oil manufactured from domestic Seed. The figures are now 57¢, with usual allowance for packages. No change has been made in Calcutta Seed product, which, of late, has been relatively a great deal higher than domestic. Out of town brands are not offering with any pressure here, the demand elsewhere being good, and what business does go through is at firm prices. The advance on city brands was somewhat unexpected to the trade, but is said to be justified by the volume of business, which, of late, has increased considerably.

Lard Oil.—There has been a wide fluctuation in price of raw material during the week, but the situation of affairs has tended to restrict pressers' operations in some degree, and the market for Oil is firm at the advance established last week, although demand has slackened. The buying is at present chiefly of a hand-to-mouth character, and the demand moderate.

Cotton Seed Oils.—Exporters have not purchased as freely as they did during the preceding week, but the aggregate of foreign and home trade buying makes a very good showing, and there is yet a fairly active demand for both crude and refined at prices a shade under those generally quoted. The demand, in fact, is such as to cause a belief that a large business will be done soon after late extensive purchases shall have been moved. Prices are very firm throughout, but have undergone no positive change.

Fish Oils.—No change has taken place in the market for crude Sperm, Whale or Menhaden Oils. Consumers are comfortably off for supplies at present, and exporters manifest indifferent interest at the moment. In the manufactured products there is about the usual movement, with prices the same as quoted last week and the market firm.

Miscellaneous.—Ceylon Cocoanut Oil has met with rather better sale and prices have improved a fraction. Cochin is without change. Olive Oil is moving in moderate quantities only, but at somewhat steadier price. No change has taken place in prices of Palm Oil, but the movement has been slightly freer.

Spirits Turpentine.—The jobbing distribution at this point has been very good, but only a moderate movement of round lots has taken place, and the Southern as well as the local market has presented a rather dull appearance. Prices have receded somewhat, 40¢ having been accepted for regular and 40½¢ for machine barrels.

Representatives of the Shawnee and Iron Point Coal and Iron Company, owning valuable coal lands and property in the Hocking Valley, on Saturday applied to the United States Circuit Court in Columbus, Ohio, for a master of accounts to take charge of the affairs of the company. The misappropriation of \$115,000 in bonds is charged, together with several thousand dollars profits of the company.

The J. M. Schoonmaker Coke Company, coke operators, announce that since their business has been purchased by the H. C. Frick Coke Company, their orders will be filled by the latter. M. C. Magee, formerly general agent of the J. M. Schoonmaker Coke Company, has been appointed general sales agent of the H. C. Frick Coke Company.

The Asbestos Lead-Joint Runner.

L. L. Lord, Meadville, Pa., is introducing a lead-joint runner, as illustrated herewith. It consists of a specially woven asbestos rope, with a safety chain in the center, with tapered ferrules on the ends, which are strongly fastened to the chain, having a hook on one end and an extension chain and spring on the other end. This device is designed to take the place of a putty or clay gasket in running lead joints, and is adapted to different sizes where joints are to be made in iron soil, water or gas pipes. These goods are made in four sizes, suitable for use on pipe from 2 to 14 inches.

*The Asbestos Lead-Joint Runner.*

ing the public interest, and are also suggestive of the rapid growth a new and meritorious industry may have in our country.

The Meteor Safety.

Banker & Campbell Company, 12 Murray street, New York, are introducing the Meteor Safety, as illustrated in Fig. 1. The rear wheel is 28 inches, and the front wheel 30 inches. The machine is geared regularly to 56 inches. The frame is weldless steel tubing throughout, with adjustable ball bearings throughout, including steering head. The pedals are ball bearing, of either style, rubber or rat trap; the handle bars are one piece weldless steel tubing, curved back, within easy reach and adjustable to any height. They are furnished with soft rubber handles finished with nickelized tips. The spokes are direct twin, butt ended at the hub and rim. The rims are oval in shape, which allows the spokes to be placed opposite to each other, and to occupy the same relative position at the hub, with 48 to the rear and 40 to the

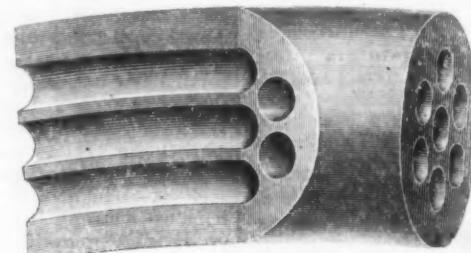
front wheel. The advantage claimed for this construction is that the liability to buckling is obviated. The chain is adjusted by means of a flat piece of steel acting on the cam principle, and which serves the dual purpose of washer and chain adjuster. It allows for an adjustment of from $\frac{1}{16}$ inch

of their cushion tire. It will be seen that there is a continuous web from end to end along the inside walls of the tire. The claim is made that these act in the same way as spokes in a suspension wheel, and tend to resist the flattening when under weight or pressure, as well as contracting the sides

*Fig. 1.—The Meteor Safety.*

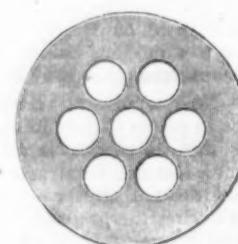
to the entire length of a link, and when once adjusted it is stated it is impossible for it to jar or work loose. The chain used is Perry's patent hardened pen steel bushed, $\frac{5}{16}$ inch by 1 inch pitch. It is claimed that this presents hardened steel surfaces at all

wearing points, and there being no noticeable transfer of weight as the wheel revolves. The manufacturers make no claim for the holes which appear in the tire, but on the web center, which gives life and quick reaction and makes these tires superior to the regular cushion tire. The weight of the Meteor is given as 87

*Fig. 2.—Transverse Section of Cushion Tire.*

able wear there need be no continual adjustment of the chain. The crank-axle hanger or bottom bracket is made in the form of a bridge or arch, with bearings on the ends, which allows the chain wheel to be placed between the bearings, thus forming a solid support for the ends

pounds with solid tire and 40 pounds with their cushion tire. Pneumatic tire is used when desired. The wheels are finished in baked enamel, with small parts nickelized.

*Fig. 3.—Cross Section of Cushion Tire.*

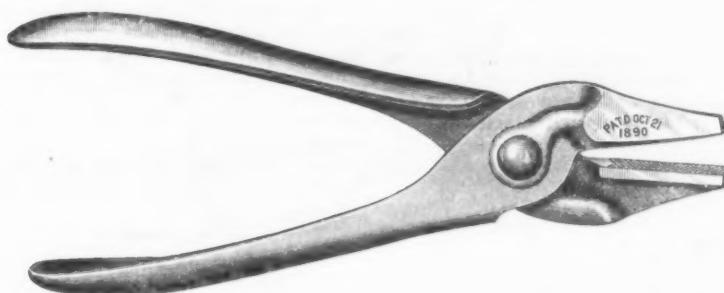
of the axle and equally distributing the strain. All four bearing cones are adjustable. It is claimed that this not only assures perfect adjustment for the bearings, but allows for any necessary alignment of the chain wheels, and that no matter how much power is applied, the chain will not bind. Figs. 2 and 3 show different views

A skilled agent of the Baldwin Locomotive Company went to Brazil to initiate the master mechanic and others representing a railway in the State of Alagoas in running a new engine. Owing to rotten ties an accident occurred which proved fatal to several persons, whereupon the agent was attacked by a furious mob, thrown into jail, and saved from more serious consequences only by the interposition of the British vice consul.

The Honduras Lumber Company have been formed at Chicago, with a paid up capital of \$2,500,000. It possesses the "stumpage" on a large tract of land along the Atlantic coast of Honduras, with the privilege of working it for 25 years free of taxation. C. Sherman Wynn is president. The company intend to erect mills on the tract, and also manufacture furniture for export to the Latin-American States, Europe and the United States.

Solid Steel Pliers.

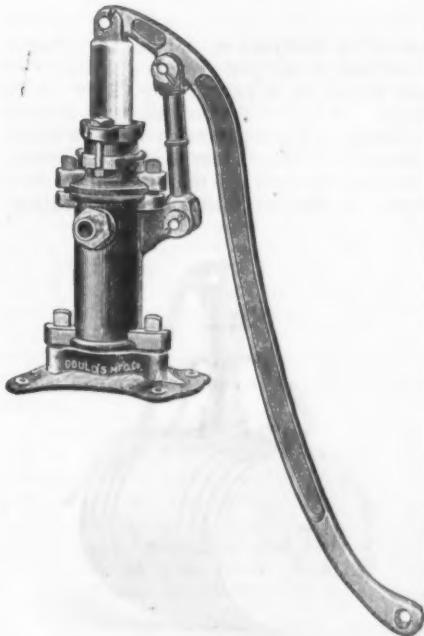
The Upson Nut Company, Unionville, Conn., New York and Chicago, are putting on the market solid steel pliers, as illustrated herewith. These pliers are

*Solid Steel Pliers.*

forged under drops and presses by which they are formed into shape from steel rolled into sheets of the proper size, and about $\frac{3}{2}$ inch in thickness. The tempering is done by a process which allows only the jaws to be hardened and is peculiar to the manufacturers. They are referred to as being strong and durable. They are made in two sizes, $5\frac{1}{2}$ and $6\frac{1}{2}$ inches; the smaller size weighs $4\frac{1}{2}$ ounces. The pliers are neat in appearance and fit the hand pleasantly.

Standard Double-Acting Spray Pump.

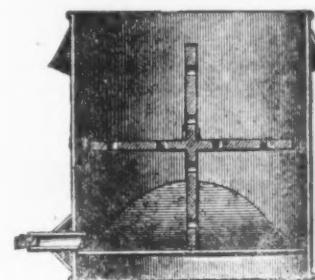
The Goulds Mfg. Company, Seneca Falls, N. Y., and 60 Barclay Street, New York, are introducing a spray pump, as illustrated herewith. It is described as being a double-acting force pump, and as throwing a continuous and powerful stream. Either of the discharges may be

*Standard Double-Acting Spray Pump.*

utilized as a return pipe to mix the contents of the barrel. The pump is arranged for either hose or gas pipe discharge for spraying trees, cotton plants, &c., with a solution of tobacco water, or water diluted with Paris green or any other poisonous mixture. When used for diffusing a solution of water diluted with Paris green on

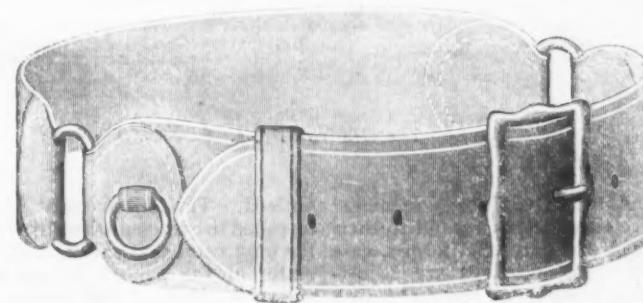
cotton plants, they should be screwed for $\frac{1}{2}$ -inch iron pipe and arranged with gas pipe arms and spreaders. When wanted for spraying trees they should be fitted with $\frac{1}{2}$ -inch hose nipples for attaching hose. It is stated that with this pump two

component parts of the cream asunder and producing the butter. The dasher is made of heavy perforated wood and is so arranged that it is easily removed for cleansing, of which Fig. 2 shows a cross section. The bottom of the churn is concave,

*Fig. 2.—Showing a Cross Section of the Dash.***English Tennis Belt.**

The Chapman Mfg. Company, Meriden, Conn., are introducing a tennis belt, as illustrated herewith. These are made for ladies and gentlemen, in fine seal leather,

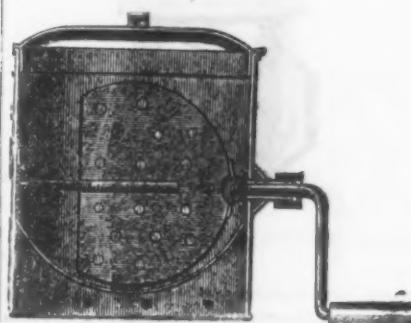
and has a heavy rim on the edge, so that it can be set on the stove without burning the contents. An opening at the bottom allows the milk to be drawn off without trouble. It is claimed for this churn that it is light in action and can be run by a child, while it will produce butter as rapidly as any other churn on the market.

*English Tennis Belt.*

also in the fine plain leathers, russet, orange and black. The trimmings are gold, silver or nickel plated, also solid brass. The manufacturers state that this style of belt has been adopted by some of the large athletic clubs in New York and Philadelphia.

The Triumph Churn.

A new churn is being placed on the market by J. Phynott, of Louisiana, Mo., as illustrated herewith. The churn is made in various sizes of heavy tin and in

*Fig. 1.—The Triumph Churn.*

shape is like a lard can. The bottom is trough shaped, and the dasher, agitating the cream, forces it against the walls of the cylindrical shaped vessel, tearing the

It is also low priced on account of its simple construction.

It is generally understood by shipping men hereabouts that the Allan Line, which will put five of its ships into service between New York and Glasgow within a few months, will eventually absorb the State Line, which lately went into liquidation.

The foreign trade of Morocco now exceeds \$16,000,000 per annum, having doubled in the last ten years. Large quantities of American goods are included in the imports, received through European firms, and merchants there want direct trade.

The city of Iquique in Chili, a seaport second only to Valparaiso in population and importance, has been reduced to ruins. A correspondent there writes that in a recent rebel attack every building in the six principal squares was completely destroyed. The insurgents seized the custom house, pillaged private residences, and finally set fire to the business quarter and reduced it to ashes. From the nitrate industry centered at that port the Chilian Government has been collecting about \$20,000,000 per annum in export duties.

The Asbestos Lead-Joint Runner.

L. L. Lord, Meadville, Pa., is introducing a lead-joint runner, as illustrated herewith. It consists of a specially woven asbestos rope, with a safety chain in the center, with tapered ferrules on the ends, which are strongly fastened to the chain, having a hook on one end and an extension chain and spring on the other end. This device is designed to take the place of a putty or clay gasket in running lead joints, and is adapted to different sizes where joints are to be made in iron soil, water or gas pipes. These goods are made in four sizes, suitable for use on pipe from 2 to 14 inches.



The Asbestos Lead-Joint Runner.

ing the public interest, and are also suggestive of the rapid growth a new and meritorious industry may have in our country.

The Meteor Safety.

Banker & Campbell Company, 12 Murray street, New York, are introducing the Meteor Safety, as illustrated in Fig. 1. The rear wheel is 28 inches, and the front wheel 30 inches. The machine is geared regularly to 56 inches. The frame is weldless steel tubing throughout, with adjustable ball bearings throughout, including steering head. The pedals are ball bearing, of either style, rubber or rat trap; the handle bars are one piece weldless steel tubing, curved back, within easy reach and adjustable to any height. They are furnished with soft rubber handles finished with nickel tips. The spokes are direct twin, butt ended at the hub and rim. The rims are oval in shape, which allows the spokes to be placed opposite to each other, and to occupy the same relative position at the hub, with 48 to the rear and 40 to the

front wheel. The advantage claimed for this construction is that the liability to buck is obviated. The chain is adjusted by means of a flat piece of steel acting on the cam principle, and which serves the dual purpose of washer and chain adjuster. It allows for an adjustment of from $\frac{1}{8}$ inch

of their cushion tire. It will be seen that there is a continuous web from end to end, the inside walls of the tire. The claim is made that these act in the same way as spokes in a suspension wheel, and tend to resist the flattening when under weight or pressure, as well as contracting the sides



Fig. 1.—The Meteor Safety.

to the entire length of a link, and when once adjusted it is stated it is impossible for it to jar or work loose. The chain used is Perry's patent hardened pen steel bushed, $\frac{1}{8}$ inch by 1 inch pitch. It is claimed that this presents hardened steel surfaces at all wearing points, and there being no notice-

stantly the weight is transferred as the wheel revolves. The manufacturers make no claim for the holes which appear in the tire, but on the web center, which gives life and quick reaction and makes these tires superior to the regular cushion tire. The weight of the Meteor is given as 37

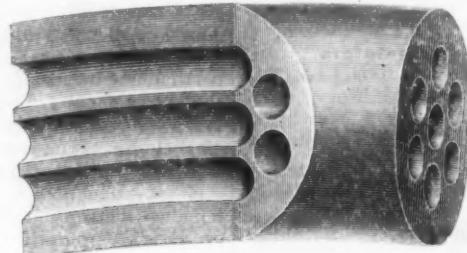


Fig. 2.—Transverse Section of Cushion Tire.

able wear there need be no continual adjustment of the chain. The crank-axle hanger or bottom bracket is made in the form of a bridge or arch, with bearings on the ends, which allows the chain wheel to be placed between the bearings, thus forming a solid support for the ends

pounds with solid tire and 40 pounds with their cushion tire. Pneumatic tire is used when desired. The wheels are finished in baked enamel, with small parts nickelized.

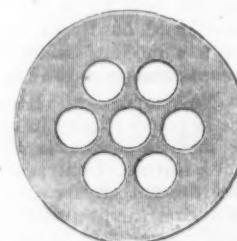


Fig. 3.—Cross Section of Cushion Tire.

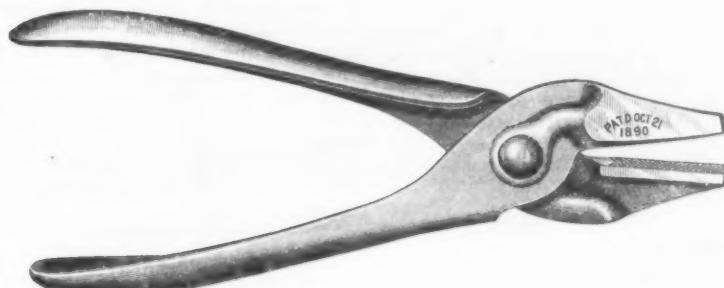
of the axle and equally distributing the strain. All four bearing cones are adjustable. It is claimed that this not only assures perfect adjustment for the bearings, but allows for any necessary alignment of the chain wheels, and that no matter how much power is applied, the chain will not bind. Figs. 2 and 3 show different views

A skilled agent of the Baldwin Locomotive Company went to Brazil to initiate the master mechanic and others representing a railway in the State of Alagoas in running a new engine. Owing to rotten ties an accident occurred which proved fatal to several persons, whereupon the agent was attacked by a furious mob, thrown into jail, and saved from more serious consequences only by the interposition of the British vice consul.

The Honduras Lumber Company have been formed at Chicago, with a paid up capital of \$2,500,000. It possesses the "stumpage" on a large tract of land along the Atlantic coast of Honduras, with the privilege of working it for 25 years free of taxation. C. Sherman Wynn is president. The company intend to erect mills on the tract, and also manufacture furniture for export to the Latin-American States, Europe and the United States.

Solid Steel Pliers.

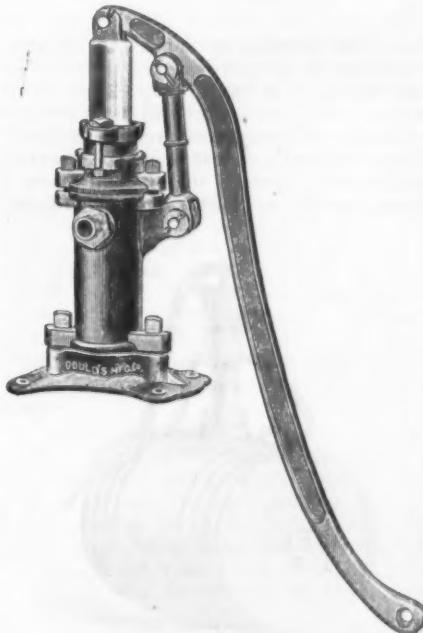
The Upson Nut Company, Unionville, Conn., New York and Chicago, are putting on the market solid steel pliers, as illustrated herewith. These pliers are

*Solid Steel Pliers.*

forged under drops and presses by which they are formed into shape from steel rolled into sheets of the proper size, and about $\frac{3}{8}$ inch in thickness. The tempering is done by a process which allows only the jaws to be hardened and is peculiar to the manufacturers. They are referred to as being strong and durable. They are made in two sizes, $5\frac{1}{2}$ and $6\frac{1}{2}$ inches; the smaller size weighs $4\frac{1}{2}$ ounces. The pliers are neat in appearance and fit the hand pleasantly.

Standard Double-Acting Spray Pump.

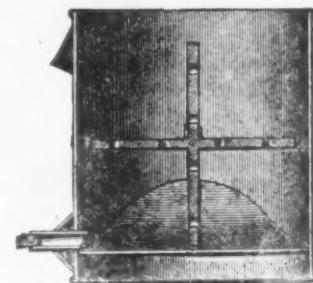
The Goulds Mfg. Company, Seneca Falls, N. Y., and 60 Barclay Street, New York, are introducing a spray pump, as illustrated herewith. It is described as being a double-acting force pump, and as throwing a continuous and powerful stream. Either of the discharges may be

*Standard Double-Acting Spray Pump.*

utilized as a return pipe to mix the contents of the barrel. The pump is arranged for either hose or gas pipe discharge for spraying trees, cotton plants, &c., with a solution of tobacco water, or water diluted with Paris green or any other poisonous mixture. When used for diffusing a solution of water diluted with Paris green on

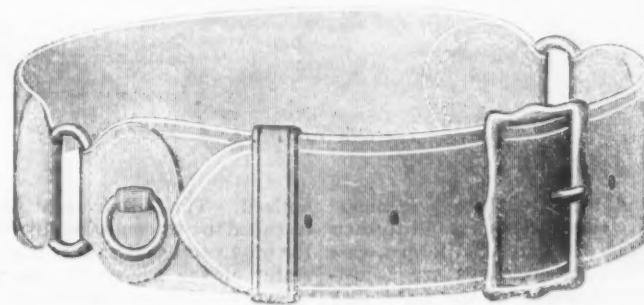
cotton plants, they should be screwed for $\frac{1}{2}$ -inch iron pipe and arranged with gas pipe arms and spreaders. When wanted for spraying trees they should be fitted with $\frac{1}{2}$ -inch hose nipples for attaching hose. It is stated that with this pump two

component parts of the cream asunder and producing the butter. The dasher is made of heavy perforated wood and is so arranged that it is easily removed for cleaning, of which Fig. 2 shows a cross section. The bottom of the churn is concave,

*Fig. 2.—Showing a Cross Section of the Dash.***English Tennis Belt.**

The Chapman Mfg. Company, Meriden, Conn., are introducing a tennis belt, as illustrated herewith. These are made for ladies and gentlemen, in fine seal leather,

and has a heavy rim on the edge, so that it can be set on the stove without burning the contents. An opening at the bottom allows the milk to be drawn off without trouble. It is claimed for this churn that it is light in action and can be run by a child, while it will produce butter as rapidly as any other churn on the market.

*English Tennis Belt.*

also in the fine plain leathers, russet, orange and black. The trimmings are gold, silver or nickel plated, also solid brass. The manufacturers state that this style of belt has been adopted by some of the large athletic clubs in New York and Philadelphia.

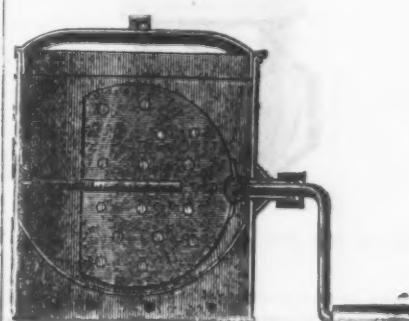
The Triumph Churn.

A new churn is being placed on the market by J. Phynott, of Louisiana, Mo., as illustrated herewith. The churn is made in various sizes of heavy tin and in

it is also low priced on account of its simple construction.

It is generally understood by shipping men hereabouts that the Allan Line, which will put five of its ships into service between New York and Glasgow within a few months, will eventually absorb the State Line, which lately went into liquidation.

The foreign trade of Morocco now exceeds \$16,000,000 per annum, having doubled in the last ten years. Large quantities of American goods are included in the imports, received through European firms, and merchants there want direct trade.

*Fig. 1.—The Triumph Churn.*

shape is like a lard can. The bottom is trough shaped, and the dasher, agitating the cream, forces it against the walls of the cylindrical shaped vessel, tearing the

The city of Iquique in Chili, a seaport second only to Valparaiso in population and importance, has been reduced to ruins. A correspondent there writes that in a recent rebel attack every building in the six principal squares was completely destroyed. The insurgents seized the custom house, pillaged private residences, and finally set fire to the business quarter and reduced it to ashes. From the nitrate industry centered at that port the Chilean Government has been collecting about \$20,000,000 per annum in export duties.

The Gendron No. 4.

Gendron Iron Wheel Company, Toledo, Ohio, and 107 Chambers street, N. Y., are putting on the market for 1891 a safety for gentlemen and ladies, as illustrated herewith. The rear wheel is 30 inches and the front wheel 28 inches in diameter. The rims are crescent steel, the tires are $\frac{1}{2}$ inch Para rubber. The spokes are tangent and are secured to the rims by ad-

Kennedy's New Patent Indicator Valve.

The engraving presented herewith shows an improvement applicable to a line of stop valves operated by a screw-threaded stem that has been brought out by Daniel Kennedy, 52 Cliff street, New York. The manufacturer points out that premises protected by sprinklers and hydrants are often damaged by fire because the valves which should have been open have been accidentally closed and remained closed un-



The Gendron No. 4.

justable nipples. The hubs are nickel plated, as are also the spokes out to their crossing. The axles are steel forged, case hardened; the ball bearings are adjustable. To the upright of the front fork are brazed top and bottom swivel brackets, made of steel forgings. The top bracket is threaded in line with the countersink of the lower bracket. It has an adjustable screw with a lock device, which is countersunk and hardened to receive the upper center ball. The bottom bracket is countersunk and hardened, forming a seat for the lower center ball. It has a rearward extension, to which the mud guard is attached. The manufacturers state that the frame is made of the best quality of imported weldless steel tubing. On the bottom of the yoke are two grooves, in which fit the two rails of the drop forged bottom bracket, and on which it slides back and forth, giving tension to the chain by means of an adjusting screw. The two lugs on top of the yoke are slotted and clamped tight upon the ball bearings by bolts when adjusted. The pedals are full ball bearing of improved pattern. The No. 4 is geared regularly to 57 inches, but if desired will be geared to 62 inches. The saddle block has two dovetail brackets to admit the two spring blocks, and these are adjusted back and forth by a double-threaded right and left center screw. By lacing together the lower edges of the saddle underneath it forms the sides round and smooth and holds them to that shape, thereby preventing the spreading of the edges when mounted. All parts to be nickelized are first copper plated to prevent rust by moisture. The machines are finished, frame, forks, mud guards and parts of the wheels are enameled. The handle bar, brake and rod are brass; the saddle bracket, springs, hubs, cranks, pedals and all bolts and nuts are nickelized. All parts, it is claimed, are interchangeable.

noticed. The improvement illustrated, is intended to overcome this objection, for it is the only valve that will indicate to the operator or the passers by the position of the valve, whether shut or open. The mechanism is all on the outside in plain sight, and it is said is not liable to injury by rough usage or to obstruction by rust. The improvement consists of a metallic



Kennedy's New Patent Indicator Valve.

sleeve in one piece, which is moved up and down by a screw thread on the valve stem so as to cover or uncover the words "open" and "shut," which are cast in bold relief letters on the bonnet of the valve. The sleeve, furthermore, is provided with a locking attachment, to prevent unauthorized persons from tampering with the valve. The movable sleeve has a pin projecting inwardly which engages

in a straight longitudinal groove and prevents the sleeve from turning, while it allows endwise play. As shown in the cut the operating spindle has a fine screw thread just under the hand wheel, upon which is the screw threaded yoke, formed in one piece with the sleeve. By this arrangement the sleeve will be raised and lowered a small extent when the valve is closed or opened. The horizontal slots in the sleeve are on opposite sides and are arranged to show the lower word "shut" when the valve is shut and the upper word "open" when the valve is opened. Fire valves provided with this attachment are made in all sizes from $\frac{1}{2}$ inch to 12 inches diameter.

Myers' Spray Pump.

F. E. Myers & Bro., Ashland, Ohio, are introducing a spray pump, as illustrated in Fig. 1. It is described as double acting, having a large air chamber to cushion the spray, and is provided with two discharge ports, both of which can be

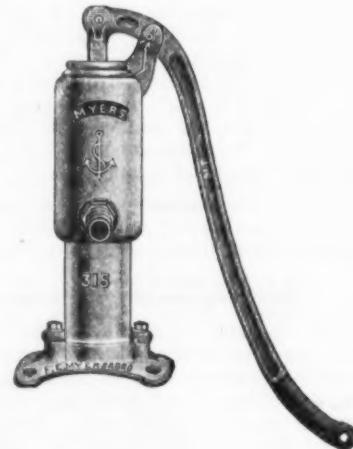


Fig. 1.—Myers' Spray Pump.

used for spraying or one as an agitator. The base is properly shaped to fasten on the staves of a barrel, Fig. 2, or on its head. It has steel pins and brass plunger cylinder. The manufacturers claim that it has good leverage, that it is very powerful and easy to operate, that it will throw a spray as fine as mist over any ordinary



Fig. 2.—Pump on Barrel with Hose Attached.

fruit tree, and that it will throw a solid stream 60 feet from the point of the nozzle. With the proper hose or bamboo attachments these pumps are designed for use in connection with vines, shrubs and fruit trees of various kinds for the extermination of any kind of insects that are injurious to the fruit of trees, vines or their foliage.

Small Screw Drivers, Etc.

John D. Birch & Co., 79 and 81 Washington street, Brooklyn, N. Y., are introducing tools as illustrated in Figs. 1, 2 and 3. The screw driver shown in Fig. 1 has three blades in one handle, the sizes being Nos. 44, 53 and 60, and designed to cover a large range of watchmakers' and other delicate work. When not in use all the blades may be drawn within the handle by the



Fig. 1.—Triplex Pocket Screw Driver.



Fig. 2.—U. S. Patent Self-Adjusting Tweezers.



Fig. 3.—Pin Vise.

knobs shown in the slots and locked in that position. When either size blade is to be used, all three are unlocked by a slight turn of the upper nut, the required blade is pushed forward, and a turn of the nut in the opposite direction fastens the blade to be used, as well as those within the

added several new devices for convenience of handling. The barrels are made of brass tubing, but are nickel-plated blue, which is referred to as resulting in a beautiful steel-blue appearance. The point is made that this is not a toy, but an effective weapon. The price remains un-

Matchless Repeating Air Rifle.

handle. We are advised that the blades are carefully tempered; that they are interchangeable, so that new ones can replace those that become worn out; and that the diamond knurling assures a firm hold on the handle. The self-adjusting thin-point tweezers shown in Fig. 2 are operated by pressing in the projection at the end of the handle, which causes the jaws to open. Tweezers with thick points are made in the same form. It is stated that the jaws of the pin vise, which is illustrated in Fig. 3, are made from Stubs' steel, hardened and tempered, resulting in a superior tool, and that it will hold wire from No. 60 Stubs' wire gauge to the finest. All of these tools are nickel plated.

Pole Iron.

The E. D. Clapp Mfg. Company, Auburn, N. Y., are putting on the market pole irons, as illustrated herewith. These

changed, being the same as the old pattern rifle.

Plain Pattern Shaft Coupling.

The E. D. Clapp Mfg. Company, Auburn, N. Y., are putting on the market a shaft coupling, as illustrated herewith.



Plain Pattern Shaft Coupling.

Finished Pole Iron.

are finished, made of $\frac{1}{2}$ -inch round iron, fitted for 1-inch light coupling clips with $\frac{1}{4}$ -inch bolt, and for 1-inch heavy coupling clip with $\frac{1}{2}$ or $\frac{1}{4}$ -inch bolt. The bolt holes on the brace end are for $\frac{1}{8}$ -inch bolts, and on the coupling end for $\frac{1}{4}$ -inch bolts. When furnished in quantity, these will be made any length or bend desired.

plete. These are now being furnished in three sizes, 1, $1\frac{1}{2}$ and $1\frac{1}{4}$ inch.

Buffalo Steam Egg Poacher Improved.

Sidney Shepard & Co., Buffalo, N. Y., and C. Sidney Shepard, Chicago, are putting upon the market an egg poacher,

improved as illustrated in Figs. 1 and 2. The improvement consists in deepening the bottom pan and by slightly flattening



Fig. 1.—Buffalo Steam Egg Poacher Improved.

the bottoms of the small cups so that they will stand without tipping. The manufacturers claim that the superiority of this



Fig. 2.—Showing the Parts of the Buffalo Egg Poacher.

egg poacher is in the fact that the eggs are poached by steam, which circulates around them and imparts a particular delicacy to them; also that the shape of cups spreads the yolk and retains it in the center of the white, making a very attractive appearance.



Matchless Repeating Air Rifle.

It is stated that with this egg poacher there are no rough and ragged edges, or waste by particles becoming detached in the water.

Grate for Roaster.

John Wise & Son, Butler, Ohio, are introducing an improved grate for their



roaster, as illustrated herewith. This grate is made of steel wire, tinned after it is made. The advantages claimed for this



Grate for Roaster.

grate are that there is no place for dirt to collect, no sharp edges to cut the fingers, that it is strong and durable, and that it will not corrode or rust.

German manufacturers at Berlin are preparing for a full exhibit at the Chicago World's Fair.

A New German Milk Can.

From a recently published volume of consular reports we reprint a report from United States Consul General W. H. Edwards of Berlin. The report describes and illustrates as follows a new milk can that has been placed on the market by Carl Thiel & Sons, of Lübeck.

This can, in consequence of a new construction, is absolutely air tight, and has the following improvements: The size most generally used has a capacity of 20 liters (21 quarts) and weighs 6 kg. (13 pounds), or, if preferred, 6½ kg. The width of the neck, 18 cms. (7 inches), is so great that the can can be conveniently and thoroughly cleaned. The cover is very simple in its construction, and hermetically closes the can. When the can is opened the ring which is used in fastening the cover becomes a convenient handle. The material (triple-tinned sheet steel) secures the greatest possible durability. For strengthening the can on the opening of the neck is a particularly strong protective ring or hoop. In addition to this there are five other hoops, and for the protection of the bottom against concussion six pieces of hoop iron, standing on edge, are used; this device thoroughly protects the bottom. Naturally, this can will not be needed in all dairies; but where the milk is to be sent a long distance, or where the milk is cooled before being sent out, hermetically sealed cans are to be recommended. What is specially recommended in this can above others is

Directors: Oliver W. Norton, Edwin Norton, Henry M. Norton, Horatio N. Norton, Lawrence A. Norton, Wm. L. Gifford, Henry F. Akin. At the Maywood factory, as heretofore, cans for packers of canned goods will be made exclusively. At the

New Cyclone No. 7.

Horton, Gilmore, McWilliams & Co., Chicago, are introducing a line of New Cyclone safety bicycles. An illustration of



Fig. 1.—New Cyclone No. 7.

Chicago factory cans used for paints, varnishes, lard, syrup, &c., and miscellaneous goods will be made. The office will be at 36 to 46 River street, Chicago,

their No. 7 with pneumatic tires is given in Fig. 1. This machine is described as made entirely of steel, fitted with adjustable ball bearings all around, long socket steering head with ball bearings, 30-inch wheels, adjustable direct spokes, diamond frame of seamless steel tubing, improved fork-end chain adjustment, Humber chain, steel sprocket wheel, detachable steel cranks, spoon brake, wide guards to wheel and chain, tool bag with wrench and oiler, gear 54, weight 45 pounds. Finished in enamel and nickel plate. Figs. 2, 3 and 4 give illustrations of pneumatic tire as used on the New Cyclone. The advantages claimed for this form of tire are speed and complete freedom from vibration. It is stated that the rider of a pneumatic tired safety is supported on a column of compressed air, which forms an exceedingly elastic and powerful spring between the ground and rim of the wheel, preventing the tire from injury in consequence of the weight of the rider. The pneumatic tire consists of a rubber tube filled with compressed air, around which is a canvas casing, formed



A New German Milk Can.

that, while the covers used on other cans, owing to their intricacy, are easily injured and with difficulty repaired, the cover of this can is simple and can always be repaired by a few blows of the hammer.

The colored race in the South is not holding its own in respect of numbers, compared with the whites. The increase shown by the census of 1880, it is now claimed, was due to imperfect enumeration. The proportion of the colored inhabitants to the white increased somewhat between 1800 and 1830, but since that time it has steadily diminished. In 1830, when this proportion was at its maximum, there were nearly six colored inhabitants to ten white, but the proportion has been reduced to a trifle more than four at the present date, or by nearly one-third of its amount.

The business which has been conducted since 1868 by O. W. Norton and Edwin Norton as a partnership will in the future be carried on by a corporation under the title of Norton Brothers, an incorporated company, with a capital of \$1,000,000. The following are the officers: O. W. Norton, president; Edwin Norton, vice-president; W. L. Gifford, secretary; O. P. Swift, treasurer. Mechanical Engineers: Edwin Norton, John G. Hodgson.

where it has been since 1874. The change above noted, except some increase of capital, is more in form than in fact. The gentlemen admitted to the management

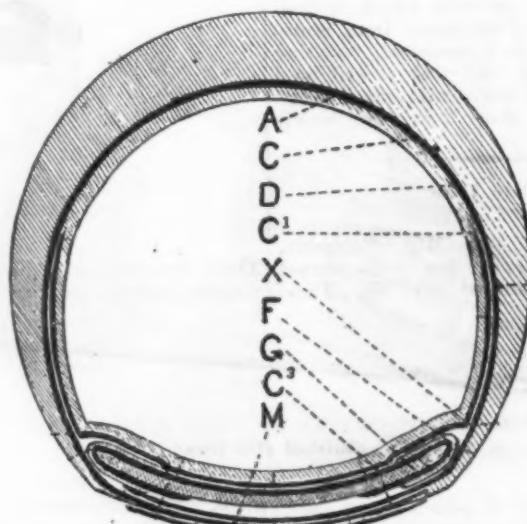


Fig. 2.—Cross Section of Tire, Showing Full Size.

have grown up in the house, and have long occupied responsible positions, and are well known to their old customers.

of strips of canvas joined together with rubber solution and sewed, having two flaps which overlap the rims of the wheel

and thus bind the tire on. These tires are guaranteed against bursting, if the directions which accompany each machine are followed. The construction of the tire may be understood by comparing Figs. 2 and 3, which have the corresponding parts

The Monarch Lawn Mower.

E. C. Stearns & Co., Syracuse, N. Y., are introducing a lawn mower, as shown in the accompanying illustration. The

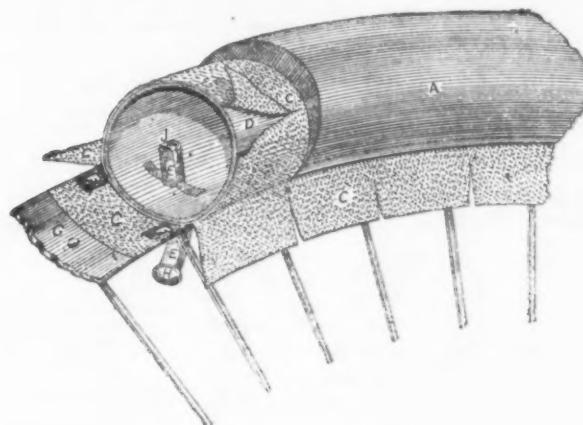


Fig. 3.—Showing Valve, &c. (Corresponding Parts in Cuts 2 and 3 are Numbered Alike.)

lettered alike. The valve shown in Fig. 3 extends through the rim, and the tire is inflated with an air pump placed in this valve, as shown in Fig. 4. The action of

points of excellence to which the manufacturers direct attention are the driving wheels, which are 9½ inches in diameter, thereby securing great leverage and re-

uneven ground; the careful adjustment of each part to the others, the discarding of all unnecessary weight, thus lightening the load; the oil holes and adjusting screws all being accessible from the upper side. The claims are made that the four revolving knives are of steel, drawn to a temper that will permit of filing, and are driven by either wheel alone, or by both; that the bearings are extra long and will therefore wear slowly; that the mover is graceful in design and proportion, and exceptionally handsome in finish, and that it is practically noiseless in operation. The bed knife is of hardened steel, the shaft of steel, and the handle of hard maple, varnished. The handle is secured to the tongue by an iron clamping device. Special attention is directed to the recently perfected anti-friction ball driving device, which is referred to as noiseless, positive acting, dispensing entirely with friction, and as embodying long wearing properties. The ball is of hardened steel, same as is used in bicycle bearings, and does the work of the ordinary pawl. The point is made that the Monarch is so well made and so perfectly fitted that the working parts should not be adjusted for at least the first two seasons. The Monarch will not be handled by jobbers, thus guaranteeing to the agent exclusive control in his city.

CONTENTS.

The Cramp Purchase.....	623
Air Compressor for U. S. Monitor Terror. II.	623
Our Copper Resources	624
The American Wire Nail Company.....	625
The Proctor Tower. Illustrated.....	626
Low Through Import Rates.....	628
The Baring Failure.....	629
Customs Decisions.....	629
Seamless and Brazed Brass and Copper Tubes. Illustrated	630
The Bass Foundry and Machine Works.....	634
The Soo Canal	634
Aluminum in Railroad Work.....	635
Adjustable Bolt Dog. Illustrated.....	636
Counterbalanced Jib Crane. Illustrated.....	637
Upright Power Hammer. Illustrated.....	638
Anderson Industries.....	638
Gearing for Electric Motors. Illustrated.....	639
The Waterworks Association.....	639
A Rhode Island Exhibition.	639
The Week	639
Obituary.....	640
Mexico's Importations.....	640
Editorials:	
Modern Navies	641
The Freedom of Labor	641
Indiana's Eight-Hour Law	641
Teaching the Analysis of Cost Sheets.....	642
Natural Gas in Indiana.....	642
Coke Consumers and the Strike.....	642
The Coke Sliding Scale	643
Washington News	644
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous	644-646
Personal	646
Trade Report: Chicago, Philadelphia, Chattanooga, St. Louis, Detroit, Cleveland, New York, Louisville, Financial, Metal Market, New York Metal Exchange, Coal Market, Imports, Pittsburgh, British Iron and Metal Markets.....	647-652
New Publications.....	652
Hardware: Condition of Trade, Notes on Prices, Electrical Goods to Carry in Stock, Protection for Retail Dealers, Trade in Minnesota, Trade in Louisville, Trade Items, Trade Topics, A Salesman's View of it, Cycles, Price-Lists, Circulars, &c., My Waste Basket, It Is Reported—, Advertising Methods, Exports, Paints and Oils.653-661	
The Asbestos Lead joint Runner. Illus.....	662
The Meteor Safety. Illustrated	662
Solid Steel Pliers. Illustrated	663
Standard Double-Acting Spray Pump. Illus.....	663
English Tennis Belt. Illustrated	663
The Triumph Churn. Illustrated.....	663
The Gendron No. 4. Illustrated	664
Kennedy's New Patent Indicator Valve. II.	664
Myers' Spray Pump. Illustrated.....	664
Small Screw Drivers, &c. Illustrated	665
Pole Iron. Illustrated	665
Matchless Repeating Air Rifle. Illustrated	665
Plain Pattern Shaft Coupling. Illustrated	665
Buffalo Steam Egg Poacher Improved. II.	665
Grate for Roaster. Illustrated	665
A New German Milk Can. Illustrated	666
New Cyclone No. 7. Illustrated	666
The Monarch Lawn Mower. Illustrated	667
Current Hardware Prices	668-673
Current Metal Prices	674

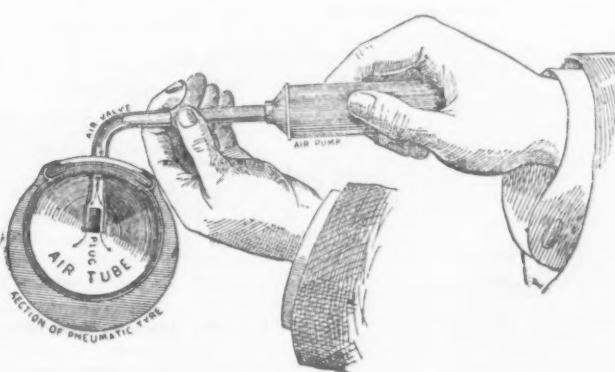
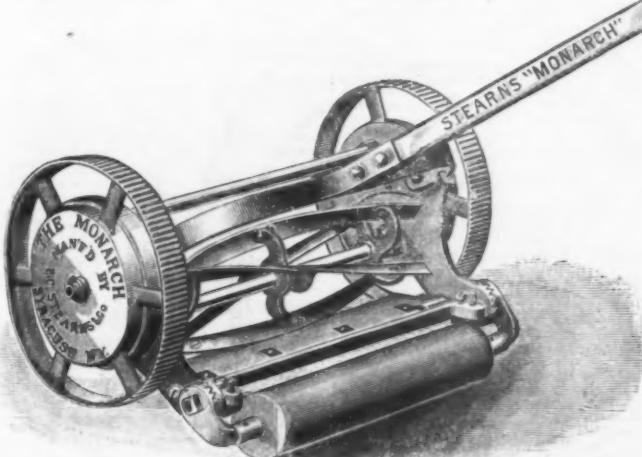


Fig. 4.—Section of Valve and Method of Inflating Tire.

the valve is as follows: A plug of vulcanite fits the inner mouth of the tube exactly, Fig. 4, and is prevented from falling into the air tube by a strip of canvas across the mouth. It is claimed that the pressure of the air inside helps to keep the sides of the valve tight against the plug and thus makes it air tight, but when

quiring less power in operation, the correct mechanical proportions of the gearing reducing friction to a minimum; the notched roller arms, which lock into cor-



The Monarch Lawn Mower.

pumping the pressure of the incoming air exceeds the pressure of the air in the tube, the sides of the valve are distended around the plug and the air rushes in.

responding notches in the frame, allowing perfectly parallel adjustment; the extra large roller, offering a minimum resistance to obstructions, and adapting itself to

CURRENT HARDWARE PRICES.

APRIL 1, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic..... \$ per doz \$3.00, 33¢
Excelsior..... \$ per doz \$10.00, 50¢
Washburn's Self-Locking..... 20¢ to 20¢ & 10¢

Ammunition.

Caps, Percussion, 1/1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproofer, 1-10's..... 34¢ to 35¢
E. B. Trimmed Edge, 1-10's..... 46¢ to 48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 46¢ to 47¢
Musket Waterproofer, 1-10's..... 50¢
G. D. 28¢
S. B. Genuine Imported..... 45¢
Eley's E. B. 54¢ to 57¢
Eley's D. Waterproofer, Central Fire..... \$1.00

Cartridges.

Rim Fire Cartridges..... 50¢ & 2¢
Rim Fire Military..... 15¢ & 2¢
Cent. Fire, Pistol and Rifle..... 25¢ & 2¢
Cent. Fire, Military and Sporting..... 15¢ & 2¢
Blank Cartridges, except 22 and 32 cal., additional 10¢ on above discounts.
Blank Cartridges, 22 cal., \$1.75..... 2¢
Blank Cartridges, 32 cal., \$3.50..... 2¢
Primed Shells and Bullets..... 15¢ & 2¢
B. B. Caps, Round Ball, \$1.75..... 2¢
B. B. Caps, Con. Ball, Swgd., \$8.00..... 2¢

Primers.

Berdan Primers, \$1.00..... 2¢
B. L. Caps (for Sturtevant Shells) \$1.00..... 2¢
All other Primers, \$1.20..... 2¢

Shells.

First quality 4, 8, 10 and 12 gauge..... 25¢ to 10¢ & 2¢
First quality, 14, 16 and 20 gauge (\$10 list)..... 30¢ to 10¢ & 2¢

Prise..... 40¢ to 2¢
Star, Club, Rival and Clinax brands, 33¢ to 10¢ & 2¢

Seibold's Comb. Shot Shells.

15¢ to 2¢
Brass Shot Shell, 1st quality..... 60¢ to 2¢
Brass Shot Shells, Club, Rival, Clinax, 65¢ to 2¢

Shells Loaded.

Standard List, July 10, 1890..... 40¢ to 10¢
Wade—Price per M. U. M. C. & W. R. A. B. E. 11 up..... 68¢
U. M. C. & W. R. A. B. E. 9 & 10..... 82¢
U. M. C. & W. R. A. B. E. 9..... 96¢
U. M. C. & W. R. A. B. E. 7..... \$1.10
U. M. C. & W. R. A. P. E. 11 up..... 1.15
U. M. C. & W. R. A. P. E. 9 & 10..... 1.50
U. M. C. & W. R. A. P. E. 8..... 1.70
U. M. C. & W. R. A. P. E. 7..... 1.80
Eley's B. E. 11 up..... \$1.75
Eley's P. E. 11 & 20..... 2.80

Anvils.

Eagle Anvils, 20 lb..... 15¢ to 15¢ & 2¢
Peter Wright's..... 11¢ to 11¢ & 2¢
Armitage's Mouse Hole..... 10¢ to 11¢
Armitage's Mouse Hole, Extra..... 12¢ to 12¢ & 2¢
Trenton..... 10¢ to 10¢ & 2¢
Wilkinson's..... 10¢ to 11¢
Moore & Barnes Mfg. Co..... 33¢ to 1¢
Anvil Vise and Drill—
Millers Falls Co., \$18.00..... 20¢
Cheney Anvil and Vise..... 25¢
Allen Anvil and Vise, \$3.00..... 40¢ to 10¢
Star..... 46¢ to 2¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits.

Douglas Mfg. Co.....
Wm. A. Ives & Co.....
Humphreysville Mfg. Co.....
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢ to 10¢
Rockford Bit Company.....
Cook's Douglas Mfg. Co..... 65¢
Cook's, N. H. Copper Co. 50¢ to 60¢ to 10¢ & 2¢
Ives' Circular Lip..... 60¢
Patent Solid Head, 10¢
C. E. Jennings & Co., No. 10, extension 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, 2¢ set, 22¢ quarters, No. 5, 8¢; No. 30, \$3.50 to 20¢
Lewis' Patent Single Twist..... 45¢
Russell Jennings' Augers and Bits 25¢ to 10¢
Imitation Jennings' Bits..... 40¢ to 60¢
Snell's Jennings' Pattern..... 60¢
Pugh's Black..... 60¢
Rockford, Jennings' Pattern..... 60¢
Car Bits, 60¢ to 60¢
Car Bits, P. S. & W. Co..... 60¢ to 10¢
Snell's Car Bits..... 60¢
L. Hommodieu Car Bits..... 15¢ to 10¢
Forstner Pat. Auger Bits..... 20¢
Cinc'innati Bell-Hangers' Bits..... 30¢ to 10¢

Bit Stock Drills.

Morse Twist Drills..... 50¢ to 10¢ & 5¢
Standard..... 50¢ to 10¢ & 5¢
Cleveland..... 50¢ to 10¢ & 5¢
Syracuse, for metal..... 50¢ to 10¢
Syracuse, for wood (wood list) 30¢ to 30¢ & 5¢
Williams' or Holt's, for metal 50¢ to 10¢ & 10¢
Williams' or Holt's, for wood..... 40¢ to 10¢
Cincinnati, for wood..... 30¢ to 10¢
Cincinnati, for metal..... 45¢ to 10¢

Expansive Bits.

Clarks' small, \$18; large, \$26 1/2¢ to 35¢ & 5¢
Ives' No. 4, \$ per doz \$60..... 40¢
Swan's..... 40¢
Steers', No. 1, \$26; No. 2, \$22..... 35¢
Stearns' No. 2, \$48..... 20¢

Gimlet Bits.

Common..... \$ gross \$2.75 to \$3.25
Diamond..... \$ per doz \$1.10..... 25¢ to 10¢
Bee..... 25¢ to 25¢ & 5¢
Double Cut, Shepardson's..... 45¢ to 45¢ to 10¢

Double Cut, Ct. Valley Mfg. Co..... 30¢ to 10¢
Double Cut, Hartwell's, \$ per gro..... 85¢ to 25¢
Double Cut, Douglass'..... 40¢ to 10¢
Double Cut, Ives'..... 60¢ to 60¢ to 10¢

Hollow Augers.

Ives'..... 33¢ to 10¢
French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Stearns' Adjustable.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Universal Expansive.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Wood's.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Cincinnati Adjustable.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Cincinnati Standard.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Ship Augers and Bits.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

L'Hommedieu's.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Watrous'.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Snell's.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Snell's Ship Auger Patti's Car Bits.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Augers and Bits.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Augers and Bits.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Douglass' { 33¢ to 10¢

Auger, Gimlet, Bit Stock, Drills, &c.

French, Swift & Co. { 33¢ to 10¢
Doug

Chucks—

Beach Pat.	each, \$8.00.	20%
Morse's Adjustable,	each, \$7.00.	20&10%
Danbury.	each, \$6.00.	30&30%
Syracuse, Bus Pat.	.....	25%
Graham Patent.	.....	35%
Skinner's Patent Chuck.	.....	35%
Combination Lathe Chucks.	.....	35%
Universal Lathe Chucks.	.....	40%
Independent Lathe Chucks.	.....	40%
Drill Chucks.	.....	15%
Union Mfg. Co.	.....	40%
Victor.	.....	8.50, 25%
Combination.	.....	40%
Universal.	.....	40%
Independent.	.....	40%

Churns.

Tiffin Union, each, 5 gal.	\$3.25; 7 gal.	\$3.75; 10 gal.	\$4.25.
McDermid Star Barrel Churn, each, 6 gal.	\$2.00; 10 gal.	\$2.75; 15 gal.	\$3.00; 20 gal.

Clamps—

R. I. Tool Co.'s Wrought Iron.	.....	25%
Adjustable, Cincinnati.	.....	15&10%
Adjustable, Hammers.	.....	15%
Adjustable, Stearn's.	.....	30&30%
Stearns' Adjustable Cabinet and Corner.	.....	30&30%
Cabinet, Sargent's.	.....	60&60%
Carriage Makers', Sargent's.	.....	70&70%
Carriage Makers', P. & W. Co.	40&40%	
Eberhard Mfg. Co.	40&40%	
Warner's.	40&40; 40&40&10&20&20	
Saw Clamps, see Vises. Saw Fliers.	.....
Carpenters', Cincinnati.	.....	25&10%
Cleavers.		
Butchers'.	.....
Bradley's.	.....	25&30%
L. & J. W. White.	.....	20&25%
Beatty's.	.....	40&40&25
New Haven Edge Tool Co.'s.	.....	40%
P. & S. W.	35&45; 35&35; 10%	
Foster Bros.	.....	30%
Schulte, Lohoff & Co.	40&40&25	

Clips—

Norway, Axle, 4 & 5-16.	55&55%
2nd Grade Norway Axle, 4 & 5-16.	65&65%
Superior Axle Clips.	60&45; 50&70%
Norway Spring Bar Clips, 5-16.	60&60&55%
Wrought-Iron Felloe Clips.	5 & 5%
Steel Felloe Clips.	5 & 5%
Baker Axle Clips.	15%

Cloth and Netting, Wire—See Wire, etc.

Cockeves.	.....	50%
Cocks, Brass.	.....
Hardware list.	.....	50&25%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.	.....
Hedford Fancy Goods Co.	40&10%	

Embossed, Gilt, Pope & Steven's list.	30&10%
Leather, Pope & Steven's list.	40%
Brass, Pope & Steven's list.	40%
Chapman Mfg. Company.	60&10; 60%

Combs, Curry.

Fitch's.	50&10; 50&10&10%
Rubber, per doz \$10.00.	20%
Perfect.	50%

Compasses, Dividers, &c.—

Compasses, Callipers, Dividers.	70; 70&10%
Benns & Call Co.'s	Dividers.
Dividers.	60&55%
Compasses & Callipers.	50&55%
Wing and Inside or Outside.	50&55%
Double.	60%
(Call's Pat. Inside).	30%
Excisor.	50%
J. Stevens & Co.'s.	50&10%

Starrett's.

Spring Callipers and Dividers.	25&10%
Lock Callipers and Dividers.	25%
Combination Dividers.	35%

Coopers' Tools—See Tools, Coopers'.

Cord—	
Sash.	
Common.	W. 10&11%
Patent, good quality.	W. 13&14%
White Cotton Braid, fair.	W. 26&27%

Common Russia Sash.

W. 13.	
Cable Laid Italian Sash.	W. 23&23
Indian Cable Laid	W. 13
Silver Laker.	10%

A Quality, White.	10&10&5%
B Quality, Drab.	10&10&5%
B Quality, White.	28&30%
B Quality, Drab.	31&33%
C Quality, White (only).	26&27%

Sylvan Spring, Extra Braided, White.	34
Lock Braided, Drab.	30&30&5%
Braded, Italian Hemp.	30&30&5%
Braded, Linen.	30&30&5%
Somper Idem, Braided, White.	30%

Egyptian, India Hemp, Braided.	25%
Samson—	

Braided, White Cotton.	30&30&5%
Braided, Drab Cotton.	30&30&5%
Braided, Italian Hemp.	30&30&5%
Braided, Linen.	30&30&5%
Tate & Co. Braided Wire.	54 ft.

Wire Picture.

Braided or Twisted.	75&10%
Corkscrews—See Screws, Cork.	

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—	
Table (H. & B. Mfg. Co.)	40%

Blake's Pattern.	W. \$2.00, 10%
Turner & Seymour Mfg. Co.	50%

Cradles—	
Grain.	50&5&3&50&10&8%

Crayons.	W. gr. 12&12&12&12.
D. M. Stewart Mfg. Co., Metal Workers.	W. gr. \$2.50.

D. M. Stewart Mfg. Co., Rolling Mill.	W. gr. \$2.50.
See also Chalk.	

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.	
Curtain Pins—See Pins, Curtain.	

Cutters—

Meat.	
Dixon's W. dos.	40&25%
Nos. 1 2 3 4 5	40&25%
\$14.00 \$17.00 \$19.00	40&25%
Woodruff's W. dos	40&25%
Nos. 10 12 22 32 42	40&25%
\$15.00 \$18.00	40&25%
Hales' Pattern W. dos.	70&70&25%
Nos. 11 12 18 20 22	70&70&25%
\$18.00 \$20.00	40&25%
American.	30&30&25%
Nos. 1 2 3 4 5 6	30&30&25%
\$27.00 \$38.00 \$45.00	30&30&25%
Enterprise.	30&30&25%
Nos. 10 12 22 32 42	30&30&25%
\$15.00 \$18.00	30&30&25%
Each.	30&30&25%
\$5 \$7 \$10 \$25 \$50	30&30&25%
Enterprise.	30&30&25%
Nos. 10 12 22 32 42	30&30&25%
\$15.00 \$18.00	30&30&25%
Great American.	30&30&25%
Nos. 11 12 18 20 22	30&30&25%
\$18.00 \$20.00	30&30&25%
Miles' Challenge W. dos.	40&40&25%
Nos. 12 14 16 18 20	40&40&25%
\$22.00 \$27.00	40&40&25%
Home No. 1.	30&30&25&10%
Nos. 2 3 4 5 6	30&30&25&10%
\$27.00 \$36.00	30&30&25&10%
Acme.	30&30&25&10%
Nos. 10 12 18 20 22	30&30&25&10%
\$22.00 \$30.00	30&30&25&10%
Home No. 1.	30&30&25&10%
Nos. 2 3 4 5 6	30&30&25&10%
\$27.00 \$36.00	30&30&25&10%
Acme.	30&30&25&10%
Nos. 10 12 18 20 22	30&30&25&10%
\$22.00 \$30.00	30&30&25&10%
Home No. 1.	30&30&25&10%
Nos. 2 3 4 5 6	30&30&25&10%
\$27.00 \$36.00	30&30&25&10%
Acme.	30&30&25&10%
Nos. 10 12 18 20 22	30&30&25&10%
\$22.00 \$30.00	30&30&25&10%
Home No. 1.	30&30&25&10%
Nos. 2 3 4 5 6	30&30&25&10%
\$27.00 \$36.00	30&30&25&10%
Acme.	30&30&25&10%
Nos. 10 12 18 20 22	30&30&25&10%
\$22.00 \$30.00	30&30&25&10%
Home No. 1.	30&30&25&10%
Nos. 2 3 4 5 6	30&30&25&10%
\$27.00 \$36.00	30&30&25&10%
Acme.	30&30&25&10%
Nos. 10 12 18 20 22	30&30&25&10%
\$22.00 \$30.00	30&30&25&10%
Home No. 1.	30&30&25

Roggins' Latches. \$ doz 30¢@35¢
Bronze Iron Drop Latches. \$ doz 70¢ net
Jap'd Store Door Handles—Nuts, \$1.02;
Plate, \$1.10; no Plate, \$0.88 net
Barn Door. \$ doz \$1.40 10¢@10¢
Chest and Lifting. 70¢

Wood—

Saw and Plane. 40¢@10¢@40¢@10¢@5¢
Hammer, Hatchet, Axe, Sledge, &c. 40¢
Brad Awl. \$ gr 32¢
Hickory Firmer Chisel, ass'd. \$ gr 4.50
Hickory Firmer Chisel, large. \$ gr 5.00
Apple Firmer Chisel, ass'd. \$ gr 5.00
Apple Firmer Chisel, large. \$ gr 6.00
Sacket Firmer Chisel, ass'd. \$ gr 3.00
Socket Framing Chisel, ass'd. \$ gr 5.00
J. S. Smith & Co.'s Pat File. 50¢
File, assorted. \$ gr 2.75
Auger, assorted. \$ gr 5.00 50¢
Auger, large. \$ gr 7.00 50¢
Pat. Auger, Douglass. set \$1.25
Pat. Auger, Swan's. \$ set \$1.00
Hoe Rake, Shovel, &c. 50¢@10¢

Hangers—

Barn Door, old patterns. 60¢@10¢@10¢@70¢
Barn Door, New England. 60¢@10¢@10¢@70¢
Samson Steel Anti-Friction. 55¢
Orleans Steel. 55¢
Hamilton Wrought Wood Track. 55¢
U. S. Wood Track. 65¢
Champion. 60¢@10¢
Rider and Wooster, Medina Mfg. Co.'s
Hat. 70¢
Climax Anti-Friction. 55¢
Climax Anti-Friction for Wood Track. 55¢
Zenith for Wood Track. 55¢
Reed's Steel Arm. 50¢
Challenge, Barn Door. 50¢
Sterling. 50¢@50¢@10¢
Victor, No. 1, \$15.00; No. 2, \$16.50; No.
3, \$18.00. 50¢@25¢
Christree. 50¢@10¢@10¢
Kidd's. 50¢@10¢@50¢
The Boss. 50¢@10¢
Best Anti-Friction. 60¢@10¢
Duplex (Wood Track). 60¢@10¢@55¢
Terry's Pat. \$ doz pr. 4 in. \$10.00; 5 in.
\$12.00. 50¢@10¢
Terry's Steel Anti-Friction Leader. 50¢@10¢
Terry's Steel Anti-Friction Ideal. 50¢@10¢
Cronk's Patent, Steel Covered. 50¢@10¢
Wood Track Iron Clad, \$ gr 10¢. 50¢@10¢
Carrier Steel Anti-Friction. 50¢@10¢
Architect, \$ set \$6.00. 20¢
Standard. 20¢@10¢
Felix. \$ set \$4.50. 20¢
Richard's. 50¢@20¢@10¢
Lane's Standard. 50¢@5@10¢@50¢
Lane's New Standard. 50¢@5@55¢
Ball Bearing Door Hanger. 20¢@10¢@25¢@10¢
Warner's Pat. 20¢@10¢@20¢@10¢@10¢
Bairns' Anti-Friction. 20¢@10¢@20¢@10¢@10¢
Steens' Challenge. 25¢@10¢@25¢@10¢@10¢
Panhandle. 40¢@10¢@20¢
American. \$ set \$6.00. 20¢@10¢
Rider & Wooster, No. 1, 62¢@4¢; No. 2,
75¢. 40¢
Paragon, Nos. 1, 2 and 3. 25¢@10¢
Cincinnati. 25¢@10¢
Paragon, Nos. 5, 6, 7 and 8. 20¢@10¢
Crescent. 20¢@10¢@50¢@10¢
Nickel Cast Iron. 50¢
Nickel, Malleable Iron and Steel. 40¢
Scranton Anti-Friction Single Strap. 55¢@10¢
Wild West, 4 in. Wheel, \$15.00. 45¢
Wheel, \$21.00. 45¢
Star. 40¢@10¢@40¢@10¢@55¢
May. 50¢@5@50¢@10¢
Barry. 40¢@10¢
Interstate. 50¢
Magic. 40¢

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's.
Hunt's.
Hurd's.
Mann's.
Peck's.
Underhill's. 40 & 10
Buffalo Hand Co.
Foster R. Plumb. 50¢@25¢
G. Hammond & Son.
Kelly's.
Sargent & Co.
P. S. & W. Co.
Ten Eyck Edge Tool Co.
Collins. 10¢
Schulte, Lohoff & Co. 50¢@50¢@55¢

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—
Parker. 75¢@25
Palmer. 50¢@5@10¢
Seymour. 70¢@25
Huffer. 50¢
Clark's, Nos. 1, 3, 5, 40 and 50.
Clark's Mortise Gravity. 50¢
Sargent's, Nos. 1, 3, 5, 11, 13.
Sargent's, No. 12. 75¢@10¢@55¢@10¢@55¢
Reading's Gravity. 75¢@10¢@75¢@10¢@55¢
Shepard's Noiseless. 75¢@10¢
Niagara. 80¢
Buffalo. 80¢
Clark's Genuine Pattern. 80¢
O. S. Lull & Porter. 75¢@10¢
Acme, Lull & Porter. 75¢
Queen Cities Reversible. 70¢@10¢@55¢@10¢
Clark's Lull & Porter, Nos. 1, 11, 16,
2, 24, 3. 75¢@10¢@55¢@10¢
Smith's Automatic Blind Pictures, No.
2, for Wood, \$9.00; No. 3, for Brick,
\$11.50. 10¢
Gate Hinges—
Western. \$ doz \$4.40, 60¢
M. E. \$ doz \$7.00, 55¢
M. E. Reversible. \$ doz \$5.20, 55¢@10¢
Clark's, Nos. 1, 2, 3. 60¢@10¢@55¢
W. Y. Star. \$ doz \$6.00, 55¢@10¢
Automatic. \$ doz \$14.00, 50¢
Common Sense. \$ doz pair \$4.50, 50¢
Seymour's. 45¢@10¢@55¢
Shepard's. 60¢@10¢@55¢
Reed's Latch and Hinges. \$ doz \$12.00,
50¢
Spring Hinges—
Union Spring and Blank Butts. 40¢
Year's Spring Hinge Co.'s list, March
1888. 30¢

Acme. 30¢
J. S. 25¢@10¢
Empire and Crown. 20¢
Hero and Monarch. 20¢
American, Gem, and Star. 20¢
Oxford. 20¢
Barker's Double Acting. 25¢
Union Mfg. Co. 25¢
Buckner's. 30¢
Buckman's. 15¢@20¢
Chicago. 30¢
Wiles'. 10¢
Devore's. 40¢
Rev. Royal. 60¢
Reliable. 60¢
Champion. 60¢
Bardsley's Patent. 40¢
Stearns'. 50¢@10¢
Niagara. Holdback pattern, per
gross. \$14.00
Wrought Iron Hinges
List February 14, 1891.

Strap and T. 50¢@10¢
Corrugated Strap and T. 50 & 10¢
Screw Hook and T. 14 to 20 in., \$ gr. 4¢
Strap. 22 to 36 in., \$ gr. 3¢
Screw Hook and Eye. 3¢ in., \$ gr. 3¢
Strap. 3¢ in., \$ gr. 2¢

Rolled Blind Hinges, Nos. 32 and 34. 50¢@10¢
Rolled Blind Hinges, Nos. 232 and 234. 55¢@10¢
Rolled Plate. 70¢@10¢
Rolled Raised. 70¢@10¢
Plate Hinges 8, 10 & 12 in., \$ gr. 5¢
"Providence" over 12 in., \$ gr. 4¢

Hoes—
Eye—
D. H. Scovill. 20¢
Lane's Crescent Planters Pattern. 45¢@5¢
Lane's Razor Blade, Scovill Pattern. 30¢
Maynard, S. & O. Pat. 45¢@5¢
Sandusky Tool Co., S. & O. Pat. 50¢@10¢@5¢
Am. Axe and Tool Co., S. & O. Pat. @00¢
Chattanooga Tool Co., S. & O. Pat. 60¢@60¢@10¢
Grub. 60¢@10¢

Handled—
Garden, Mortar, &c. 85¢@5@65¢@10¢
Planter, Cotton &c. 85¢@5@65¢@10¢
Warren Hoe. 60¢
Magic. \$ doz \$4.00

Hog Rings and Ringers—See
Rings and Ringers.

Holisting Apparatus—See
Machines, Holisting.

Hollow-Ware—See Ware, Hollow.

Holders—
Bag—
Sprengle's Pat. \$ doz \$18. 60¢
Bit—
Extension, Barber's. \$ doz \$15.00. 40¢@40¢@10¢
Ives, \$ doz \$20.00. 80¢@5@60¢@10¢
Diagonal. \$ doz \$24.00. 40¢
Angular. \$ doz \$24.00, 40¢@5¢

File and Tool—
Bals Pat. \$ doz \$4.00; 25¢
Nicholson File Holders. 20¢
Dick's Tool Holder. 20¢

Hooks—
Cast Iron—
Bird Cage, Sargent's list.
Bird Cage, Reading. 60¢@10¢@10¢
Clothes Line, Sargent's list.
Clothes Line, Reading list. 60¢@10¢@10¢
Ceiling Sargent's list. 55¢@10¢@10¢
Harness, Reading list. 55¢@10¢@10¢
Coat and Hat, Sargent's list. 55¢@10¢@10¢
Coat and Hat, Reading. 50¢@10¢@10¢
Wrought Iron—
Cotton. \$ doz \$1.25
Cotton Pat. (N. Y. Mallet & Handle W'ks). 30¢
Tassel and Picture (T. & S. Mfg. Co.). 50¢
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—
Wire Coat and Hat, Gem, list April, 1886. 50¢@10¢@10¢
Wire Coat and Hat, Miles', list April, 1886. 50¢@10¢@10¢
Indestructible Coat and Hat. 45¢
Wire Coat and Hat, Standard. 45¢
Handy Hat and Coat. 50¢@10¢
Steady Ceiling Hooks. 50¢@10¢
Belt. 50¢@10¢@10¢
Atlas, Coat and Hat. 50¢

Miscellaneous—
Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50
Nolin's Grass. \$ doz \$2.25
Bush. 55¢@60¢
Whiffetree—Patent. 55¢
Hooks and Eyes—Malleable Iron.
70¢@70¢@10¢
Hooks and Eyes—Brass. 60¢@10¢@10¢
Fish Hooks, American. 50¢
Bench Hooks. See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—
Competition. 75¢@75¢@5¢
Standard. 60¢@10¢@5@10¢@10¢
Extra. 50¢@10¢@6¢
N. Y. R. & P. Co., Para. 25¢@5¢
N. Y. B. & P. Co., Extra. 40¢@40¢@5¢
N. Y. B. & P. Co., Dundee. 50¢@10¢@6¢

Huskers—
Blair's Adjustable. \$ gr 18.00
Blair's Adjustable Clipper. \$ gr 7.00
Hubbard's Solid Steel. \$ gr 4.50

Indurated Fiber—Ware—See
Ware, Indurated Fiber.

Irons—
Sad—
From 4 to 10, at factory. \$ 100.00
Self-Heating. \$ doz \$9.00 net
Self-Heating Tailors'. \$ doz \$18.00 net
Mrs. Pott's Irons. 50¢@5¢
Enterprise Star Irons. 50¢@5¢
XX Cold Handle Sad Irons. 50¢@5¢

Ideal Irons new list 50¢@10¢@50 & 10¢@10¢

Salamander, Irons. 25¢

B. B. Sad Irons, \$ gr. 3@34¢

Combined Fluter and Sad Iron. \$ doz

\$15.00. 15¢

Fox Reversible, Self-Fluter \$ doz \$24.00

Chinese Laundry (N. E. Butt Co.) \$14¢, 15¢

New England. 5¢, 15¢

Mahony's Troy Pol. Irons. 25¢

Sensible, list Jan. 31. 50¢@10¢@5¢

Sensible Tailor's Irons. 33¢@5¢

National Self-Heating. 30¢

Soldering—
Soldering Coppers. \$ doz 22¢@23¢

Cover's Adjustable, list Jan. 1, 1886. 25¢@2¢

Irons, Pinking, per doz., 65¢

Jacks, Wagons—See Screws.

Jacks, Wagon. 33¢@5¢

Daisy. 33¢@5¢

Victor. 33¢@5¢

Kettles—
Brass, Stun, Plain, list Jan. 1, '91. 95¢@5¢

Brass, Spun, P. W. M. list Jan. 1, '91. 20¢

Enamelled and Tea—See Hollow Ware.

Keys—
Lock Aso's list Dec. 30, 1886. 50¢@10¢@5¢

Eagle, Cabinet, &c. 60¢@5¢

Deitz, Nos. 36 to 39. 40¢

Deitz, Nos. 51 to 63. 40¢@10¢

Deitz, Nos. 88 to 96. 30¢

Stoddard Lock Co. 30¢@33¢@5¢

"Champion" Night Latches. 40¢

Barnes Mfg. Co. 40¢@40¢@10¢

Eagle and Corbin Trunk. 25¢@2¢

"Champion" Cab. and Combi. 33¢@5¢

Yale. net prices

Romer's. 25¢

Door Locks, Latches, &c.—
R. & E. Mfg. Co., list Mar. 20, 1889. 65¢@10¢@70

Mallory, Wheeler & Co., list Much lower net

July. 28¢

Sargent's Co., list Aug. 1, '88. often made.

Reading Hardware Co., list Feb. 2, '88. 28¢@25¢

Brittan, Graham & Mathes, list Jan. 1890. 28¢@25¢

Perkins' Burglar Proof. 60¢@10¢@10¢

Plate. 28¢@25¢

Barnes Mfg. Co. 40¢@40¢@10¢

Yale. net prices

Deitz Flat Key. 30¢

L. & C. Round Key Latches. 30¢@10¢@10¢

L. & C. Flat Key Latches. 30¢@8¢@10¢

Romer's Night Latches. 15¢

Sheppard or U. S. Seed's N. Y. Hasp Lock. 25¢

Padoocks—
List Dec. 23, '84. 75¢@10¢@10¢

Brittan, Graham & Mathes. 75¢@10¢@10¢

Yale Lock Mfg. Co. net prices

Eagle. 25¢@25¢

Eureka, Eagle Lock Co. 40¢@25¢

Romer's, Nos. 0 to 91. 30¢

Romer's Scandinavian, &c., Nos. 100 to 200. 50¢@15¢

A. E. Deitz. 40¢

Champion Padlocks. 40¢

Hotchkiss. 30¢

Star. 30¢

Horseshoe. 30¢@10¢@10¢@10¢@10¢

Barnes Mfg. Co. 40¢@40¢@10¢

Nock's. 30¢

Brown's Pat. 30¢

Scandinavian. 90¢@90¢@10¢

E. T. Fraim's Keystone Scandinavian: Nos. 119, 120, 130 and 140. 90¢@10¢

Other Nos. 65¢

Amer. Sword Co. up to No. 150. 40¢

Amer. Sword Co. above No. 150. 50¢

Slaymaker Barry & Co. No. 1010 line. 85¢@5¢

No. 41 line. 40¢@10¢

No. 61 line. 50¢@5¢

No. 21 line. 75¢

Sash, &c.—
Clark's, No. 1, \$10; No. 2, \$8 \$ gr. 33¢@4¢

Ferguson's. 33¢@4¢

Morris and Triumph, list Aug. 16, 1886. 60¢@25¢

Victor. 60¢@10¢@25¢

Shepard Hand Fluter, No. 110	40¢	World's Best, 2 gross, No. 1, \$12.00	Iron Planes—	Pumps—
\$11.00.		No. 2, \$24.00; No. 3, \$36.00.....	Bailey's (Stanley R. & L. Co.)	Cistern, Best Makers.....
Shepard Hand Fluter, No. 96	40¢	50¢ 10¢	40¢ 10¢ @ 40¢ 10¢ 10¢	Pitcher Spout, Best Makers.....
\$8.00.....		50¢ 5¢	Miscellaneous Planes (Stanley R. & L. Co.)	Pitcher Spout, Cheaper Goods.....
Clark's Hand Fluter, 2¢ dos \$15.00.....	35¢	55¢	20¢ 10¢ @ 20¢ 10¢ 10¢	
Combined Fluter and Sand Iron,		50¢ 4¢	Victor Planes (Stanley R. & L. Co.)	
2¢ dos \$15.00.....	30¢	50¢ 4¢	20¢ 10¢ @ 20¢ 10¢ 10¢	
Buffalo		50¢ 10¢	Steer's Iron Planes.....	
Hoisting—		50¢ 10¢	35¢ 35¢ 10¢	
Moore's Hand Hoist, with Lock	20¢	50¢ 5¢	Meriden Mfg. Co. 5¢	
Brake.....		50¢ 5¢	40¢ 40¢ 10¢	
Moore's Differential Pulley Block.....	40¢	50¢ 5¢	Davis' Iron Planes.....	
Energy Mfg. Co.'s.....	25¢	50¢ 5¢	40¢ 40¢ 10¢	
Washing—		50¢ 5¢	Hirmingham Plane Co.....	
Anthony Wayne, 2¢ dos No. 1, \$51; No. 2, \$16; No. 3, \$42.		50¢ 5¢	50¢ 50¢ 10¢	
Mallets.		50¢ 5¢	Gage Tool Co.'s Self-Setting.....	
Hickory.....	20¢ 10¢ @ 20¢ 10¢ 10¢	50¢ 5¢	20¢ 10¢ @ 20¢ 10¢ 10¢	
Lignumite.....	20¢ 10¢ @ 20¢ 10¢ 10¢	50¢ 5¢	Chaplin's Iron Planes.....	
B. & L. Block Co., Hickory & L. V.		50¢ 5¢	40¢ 40¢ 10¢	
30¢ 30¢ 10¢		50¢ 5¢	Sargent's.....	
Mattocks. Regular list,		60¢ 10¢ @ 60¢ 10¢ 5¢	30¢ 10¢ @ 30¢ 10¢ 10¢	
Measures—		50¢ 5¢	Standard Tool Co.....	
Standard Fibware, No. 1, peck, 2¢		50¢ 5¢	Plane Irons—	
dozen, \$4; ½-peck, \$3.50.		50¢ 5¢	Butcher's.....	
Meat Cutters—See Cutters, Meat.		50¢ 5¢	Buck Bros.....	
Mills.		50¢ 5¢	Auburn " Thistle.....	
Coffee—		50¢ 5¢	Ohio.....	
Box and Side, List Jan. 1, 1888.....	60¢ 2¢	50¢ 5¢	35¢ 2¢	
American, Enterprise Mfg. Co. 20¢ 10¢ @ 30¢		50¢ 5¢	Sandusky.....	
The Swift, Lane Bros.....	20¢ 10¢	50¢ 5¢	S. & J. I. White.....	
Mincing Knives—See Knives,		50¢ 5¢	Plates.	
Mincing.		50¢ 5¢	Felice.....	
Molasses Gates—See Gates, Mo-		50¢ 5¢	Pliers and Nippers—	
lasses.		50¢ 5¢	Button's Patent.....	
Money Drawers—See Drawers,		50¢ 5¢	50¢ 50¢ 10¢	
Money.		50¢ 5¢	Hall's No. 2, 5 in., \$13.00; No. 4, 7 in.	
Mowers, Lawn.		50¢ 5¢	\$21.00 2¢ dos	
Pennsylvania, New Model, Excelsior		50¢ 5¢	20¢ 10¢ @ 33¢ 4¢	
Continental, &c.....	60¢ 60¢ 5¢	50¢ 5¢	Humason & Beckley Mfg. Co. 50¢ 50¢ 10¢	
Philadelphia.....	60¢ 10¢	50¢ 5¢	Lindsay's Giant.....	
Other Machines.....	60¢ 10¢ 5¢ @ 70¢	50¢ 5¢	Gas Pliers.....	
Muzzles—		50¢ 5¢	Gas Pliers, Custar's Nickel Plated.....	
Safety.....		50¢ 5¢	40¢ 40¢ 5¢	
Nails.		50¢ 5¢	Russell's Parallel.....	
Cut and Wire. See Trade Report.		50¢ 5¢	25¢	
Wire Nails, Papered.		50¢ 5¢	P. S. W. Cast Steel.....	
Association list, July 15, '89.....	75¢ 10¢	50¢ 5¢	P. S. & W. Tinner's Cutting Nippers.....	
Tack Mfrs.' list.....	70¢	50¢ 5¢	Carew's Pat. Wire Cutters.....	
Wire Nails, Standard Penny.		50¢ 5¢	20¢	
Card June 1, '89, base.....	\$2.35 @ \$1.50	50¢ 5¢	Corrill's Parallel, 2¢ dos \$12.00.....	
Horse—		50¢ 5¢	30¢ 5¢	
Nos. 6, 7, 8, 9, 10		50¢ 5¢	Cronk's 8 in., \$15.00; 10 in. \$21.00	
Ausable.....	25¢ 20¢ 25¢ 24¢ 23¢	50¢ 5¢	40¢ 40¢ 5¢	
40¢ 5¢ 2¢		50¢ 5¢	Plumbs and Levels—	
Clinton, Fin. 19¢ 17¢ 16¢ 15¢ 14¢		50¢ 5¢	Regular List.....	
20¢ 5¢ 2¢		50¢ 5¢	70¢ 10¢ @ 70¢ 10¢ 10¢	
Essex.....	25¢ 20¢ 25¢ 24¢ 23¢	50¢ 5¢	Diaston's.....	
25¢ 10¢ @ 25¢ 10¢ 10¢		50¢ 5¢	50¢ 5¢	
Lyra.....	19¢ 17¢ 16¢ 15¢ 14¢	50¢ 5¢	Pocket Levels.....	
Snowden.....	19¢ 17¢ 16¢ 15¢ 14¢	50¢ 5¢	70¢ 10¢ @ 70¢ 10¢ 10¢	
Putnam.....	23¢ 21¢ 20¢ 19¢ 18¢	50¢ 5¢	Davis Iron Levels.....	
1000 in year 1889		50¢ 5¢	30¢ 5¢	
Vulcan.....	23¢ 21¢ 20¢ 19¢ 18¢	50¢ 5¢	Davis' Inclinometers.....	
12¢ 2¢ 25¢		50¢ 5¢	10¢ 10¢	
Northwest'n.....	25¢ 23¢ 22¢ 21¢ 20¢	50¢ 5¢	Poachers.	
25¢ 25¢ 25¢		50¢ 5¢	Egg.	
Globe.....	23¢ 21¢ 20¢ 19¢ 18¢	50¢ 5¢	Buffalo Steam Egg Poachers, 2¢ dos, No.	
Boston.....	23¢ 21¢ 20¢ 19¢ 18¢	50¢ 5¢	1, \$6.00; No. 2, \$9.00.	
A. C.....	25¢ 23¢ 22¢ 21¢ 21¢	50¢ 5¢	25¢	
C. B. K.....	25¢ 23¢ 22¢ 21¢ 21¢	50¢ 5¢	Silver & Co., 6-ring, 2¢ dos \$4; 3-ring \$2	
Maud S.....	25¢ 23¢ 22¢ 21¢ 21¢	50¢ 5¢	Pokers.	
40¢ 10¢ 5¢		50¢ 5¢	Apple.	
40¢ 10¢ 5¢		50¢ 5¢	Standard List:	
40¢ 10¢ 5¢		50¢ 5¢	No. 0.....	
1¢ 10¢ 5¢		50¢ 5¢	\$3.75 \$4.25 \$4.75 \$5.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 1.....	
2¢ 10¢ 5¢		50¢ 5¢	\$4.25 \$4.75 \$5.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 2.....	
2¢ 10¢ 5¢		50¢ 5¢	\$4.75 \$5.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 3.....	
2¢ 10¢ 5¢		50¢ 5¢	\$5.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 4.....	
2¢ 10¢ 5¢		50¢ 5¢	\$5.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 5.....	
2¢ 10¢ 5¢		50¢ 5¢	\$6.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 6.....	
2¢ 10¢ 5¢		50¢ 5¢	\$6.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 7.....	
2¢ 10¢ 5¢		50¢ 5¢	\$7.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 8.....	
2¢ 10¢ 5¢		50¢ 5¢	\$7.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 9.....	
2¢ 10¢ 5¢		50¢ 5¢	\$8.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 10.....	
2¢ 10¢ 5¢		50¢ 5¢	\$8.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 11.....	
2¢ 10¢ 5¢		50¢ 5¢	\$9.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 12.....	
2¢ 10¢ 5¢		50¢ 5¢	\$9.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 13.....	
2¢ 10¢ 5¢		50¢ 5¢	\$10.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 14.....	
2¢ 10¢ 5¢		50¢ 5¢	\$10.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 15.....	
2¢ 10¢ 5¢		50¢ 5¢	\$11.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 16.....	
2¢ 10¢ 5¢		50¢ 5¢	\$11.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 17.....	
2¢ 10¢ 5¢		50¢ 5¢	\$12.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 18.....	
2¢ 10¢ 5¢		50¢ 5¢	\$12.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 19.....	
2¢ 10¢ 5¢		50¢ 5¢	\$13.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 20.....	
2¢ 10¢ 5¢		50¢ 5¢	\$13.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 21.....	
2¢ 10¢ 5¢		50¢ 5¢	\$14.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 22.....	
2¢ 10¢ 5¢		50¢ 5¢	\$14.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 23.....	
2¢ 10¢ 5¢		50¢ 5¢	\$15.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 24.....	
2¢ 10¢ 5¢		50¢ 5¢	\$15.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 25.....	
2¢ 10¢ 5¢		50¢ 5¢	\$16.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 26.....	
2¢ 10¢ 5¢		50¢ 5¢	\$16.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 27.....	
2¢ 10¢ 5¢		50¢ 5¢	\$17.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 28.....	
2¢ 10¢ 5¢		50¢ 5¢	\$17.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 29.....	
2¢ 10¢ 5¢		50¢ 5¢	\$18.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 30.....	
2¢ 10¢ 5¢		50¢ 5¢	\$18.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 31.....	
2¢ 10¢ 5¢		50¢ 5¢	\$19.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 32.....	
2¢ 10¢ 5¢		50¢ 5¢	\$19.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 33.....	
2¢ 10¢ 5¢		50¢ 5¢	\$20.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 34.....	
2¢ 10¢ 5¢		50¢ 5¢	\$20.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 35.....	
2¢ 10¢ 5¢		50¢ 5¢	\$21.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 36.....	
2¢ 10¢ 5¢		50¢ 5¢	\$21.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 37.....	
2¢ 10¢ 5¢		50¢ 5¢	\$22.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 38.....	
2¢ 10¢ 5¢		50¢ 5¢	\$22.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 39.....	
2¢ 10¢ 5¢		50¢ 5¢	\$23.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 40.....	
2¢ 10¢ 5¢		50¢ 5¢	\$23.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 41.....	
2¢ 10¢ 5¢		50¢ 5¢	\$24.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 42.....	
2¢ 10¢ 5¢		50¢ 5¢	\$24.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 43.....	
2¢ 10¢ 5¢		50¢ 5¢	\$25.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 44.....	
2¢ 10¢ 5¢		50¢ 5¢	\$25.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 45.....	
2¢ 10¢ 5¢		50¢ 5¢	\$26.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 46.....	
2¢ 10¢ 5¢		50¢ 5¢	\$26.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 47.....	
2¢ 10¢ 5¢		50¢ 5¢	\$27.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 48.....	
2¢ 10¢ 5¢		50¢ 5¢	\$27.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 49.....	
2¢ 10¢ 5¢		50¢ 5¢	\$28.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 50.....	
2¢ 10¢ 5¢		50¢ 5¢	\$28.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 51.....	
2¢ 10¢ 5¢		50¢ 5¢	\$29.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 52.....	
2¢ 10¢ 5¢		50¢ 5¢	\$29.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 53.....	
2¢ 10¢ 5¢		50¢ 5¢	\$30.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 54.....	
2¢ 10¢ 5¢		50¢ 5¢	\$30.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 55.....	
2¢ 10¢ 5¢		50¢ 5¢	No. 56.....	
2¢ 10¢ 5¢		50¢ 5¢	No. 57.....	
2¢ 10¢ 5¢		50¢ 5¢	\$31.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 58.....	
2¢ 10¢ 5¢		50¢ 5¢	\$31.75	
2¢ 10¢ 5¢		50¢ 5¢	No. 59.....	
2¢ 10¢ 5¢		50¢ 5¢	\$32.25	
2¢ 10¢ 5¢		50¢ 5¢	No. 60.....	
2¢ 10¢ 5¢		50¢ 5¢	\$32.75	
2¢ 10¢ 5¢				

Atkins' Circular Shingle and Heading dis 50¢		Hammer, Hotchkiss.....\$5.50, 10¢		Smith's Adjustable Milk Strainer. W. dos \$2.00		Pence Staples, Galvanized. / Same price Fence Staples, Plain. ....as B'rb Wire	
Atkins' Silver Steel Diamond X Cuts # foot 70¢		Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢		Smith's Adjustable T. & C. Strainer. W. dos \$1.25		Fence Staples, Plain. ....See Tr'd Rep.	
Atkins' Special Steel Dexter X Cuts # foot 50¢		Bemis & Call Co.'s Lever and Spring Hammer.....\$30 & 25¢		Sieves, Wooden Rim— Iron. Plated.		Steelyards.....\$0.210 & 50¢	
Atkins' Special Steel Diamond X Cuts # foot 25¢		Bemis & Call Co.'s Plate.....10¢		Mesh 18, Nested, W. dos... \$0¢ \$1.00		Stocks and Dies—	
Atkins' Champion and Electric Tooth X Cuts.....# foot 30¢		Aiken's Genuine.....\$13.00, \$62.10¢		Mesh 20, Nested, W. dos... \$0¢ \$1.10		Blacksmith's	
Atkins' Hollow Back X Cuts. # foot 20¢		Aiken's Imitation.....\$7.00, 55¢		Mesh 24, Nested, W. dos... \$1.15 1.95		Waterford Goods.....40¢ & 10¢ & 50¢	
Atkins' Mulay, Mill and Drag.....40¢		Hart's Pat. Lever.....\$0.25		Skeins, Thimble—		Butterfield's Goods.....40¢ & 10¢ & 50¢	
Atkins' One-Man Saw, with handles, # foot 40¢		Dissot's Star.....\$0.25		Western list.....75¢ & 75¢ & 10¢		Lightning Screw Plate.....25¢ & 50¢	
Peace Circular and Mill.....45¢		Leopold.....\$0.40 & 10¢ & 50¢		Columbus Wrt. Steel. Special net prices		Roece's New Screw Plates.....35¢ & 50¢ & 40¢	
Peace Hand Panel and Rip.....25¢		Atkin's Lever.....W. dos No. 1, \$6.00		Coldbrookdale Iron Co.....60¢		Reversible Ratchet.....30¢	
Peace Cross Cuts.....45¢		Atkin's Criterion.....W. dos No. 1, \$6.00		Seneca Falls Pattern.....60¢		Gardner.....25¢	
Richardson's Circular and Mill.....45¢		Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢		Utica P. S. T. Skeins.....60¢			
Richardson's X Cuts.....45¢		Avery's Saw Set and Punch.....\$0.50		Utica Turned and Fitted.....35¢			
Richardson's Hand, &c. ....45¢		Chieftain H. R. Co.'s Superior.....\$0.50		Sieves—			
C. E. Jennings & Co., Hand, Panel and Rip.....25¢		Sharpeners, Knife.		School, by case.....\$0.210 & 10¢ & 10¢ & 10¢		Morrill's.....W. dos \$9. 50¢	
Rock Saws—		Parkins.		Saws, Harness, &c.—		Hotchkiss's.....W. dos \$5. 10¢ & 10¢ & 10¢	
Griffin's, complete.....40¢ & 10¢ & 50¢		Applewood Handles.....W. dos \$0.00, 40¢		Anchor (T. & S. Mfg. Co.).....65¢		Weston's, No. 1, \$10; No. 2, \$20. 25¢ & 50¢	
Griffin's Hack Saw, Blades.....40¢ & 10¢ & 50¢		Rosewood or Cocobolo. W. dos \$9.00, 40¢		Hotchkiss' (Bristol).....\$0.20 & 10¢		McGill's.....W. dos \$3. 10¢	
Star Hack Saws and Blades.....25¢		Shaves, Spoke.		Andrews.		Cincinnati.....25¢ & 10¢	
Eureka and Crescent.....25¢		Iron.....45¢		Sargent's Patent Guarded.....\$0.10 & 10¢ & 10¢			
Scroll—		Wood.....\$0.25		German, new list.....40¢ & 10¢			
Lester, complete, \$10.00.....25¢		Bailey's (Stanley R. & L. Co.).....\$0.210 & 10¢		Cover, New Patent.....\$0.50 & 25¢			
Rogers, complete, \$4.00.....25¢		Stearns'.....\$0.210 & 10¢		Cover, New R. E.....\$0.225			
Barney's Builders' and Cabinet Makers', \$15.....25¢		Cincinnati.....\$0.210 & 10¢		Covered Spring.....\$0.10 & 10¢ & 10¢			
Barney's Scroll Saw Blades.....35¢		Shears—					
Saw Frames—See Frames, Saw.		American (Cast) Iron.....75¢ & 10¢ & 10¢ & 5¢		Snares, Scythe.			
Saw Sets—See Sets, Saw.		Barnard's Lamp Trimmers.....\$ dos \$3.75		List.....\$0.210 & 10¢ & 10¢ & 10¢			
Saw Tools—See Tools, Saw.		Tinners'.....\$0.20 & 25¢		Soldering Irons—See Irons, Solder- ing.			
Scales—		Seymour's, List, Dec. 1881.					
Hatch, Counter, No. 171, good quality, # dos \$21.00		\$0.20 & 10¢ & 10¢ & 10¢ & 10¢ & 10¢ & 5¢					
Hatch, Tea, No. 161....W. dos \$0.75 & \$7.00		Heinisch's, List, Dec. 1881.					
Union Platform, Plain.....\$3.10 & 2.20		\$0.20 & 10¢ & 10¢ & 10¢ & 10¢ & 10¢ & 5¢					
Union Platform, Striped.....\$3.10 & 2.50		Heinisch's Tailor's Shears.....\$0.210 & 10¢					
Chatillon's Grocers' Trip Scales.....60¢		First quality C. S. Trimmers.....\$0.20 & 10¢					
Chatillon's Eureka.....25¢		Second quality C. S. Trimmers.....\$0.20 & 10¢					
Chatillon's Favorite.....40¢		Acme Cast Shears.....\$0.210 & 10¢					
Family, Turnbulls.....\$0.20 & 10¢		Diamond Cast Shears.....\$0.210 & 10¢					
Riehle Bros.' Platform.....40¢		Clipper.....\$0.210 & 10¢					
Scale Beams—See Beams, Scale		Victor Cast Shears.....\$0.20 & 10¢ & 10¢ & 5¢					
Scissors, Fluting.....45¢		Hove Bros. & Hubert, Solid Forged Steel.....\$0.210 & 10¢					
Scrapers—		Chicago Drop Forge & F. Co., Solid Steel Forged.....\$0.210 & 10¢					
Adjustable Box Scraper (S. R. & L. Co.) \$0.50.....\$0.20 & 10¢		Claus Shear Co., Japanned.....\$0.210 & 10¢					
Box, 1 Handle.....\$ dos \$4.00, 10¢		Claus Shear Co., Nickel-plate, same list, 60¢					
Box, 2 Handles.....\$ dos \$6.00, 10¢		Galvanic, 3½ to 9 in, W. dos, \$1.00 W. inch					
Dennison Box and Ship.....\$0.20 & 10¢		Pruning Shears and Hooks.					
Foot.....\$0.20 & 10¢ & 60¢							
Ship, Common Tool.....\$ dos \$5.50 net Ship, R. I. Tool Co.....\$0.20 & 10¢							
Screen Window and Door Frames—See Frames.							
Screw Drivers—See Drivers, Screw.							
Screws.							
Bench and Hand—							
Bench, Iron.....55¢ & 10¢ & 55¢ & 10¢ & 10¢							
Bench, Wood, Beech.....\$ dos \$2.25							
Bench, Wood, Hickory.....20¢ & 10¢							
Hand, Wood.....\$0.20 & 10¢ & 25¢ & 10¢ & 5¢							
Leg, Blunt Point, list Jan. 1, 1890, 75¢ & 10¢							
Conch and Leg, Gimlet Point, list Jan. 1, 1890.....75¢ & 10¢							
Bed.....\$0.25 & 5¢							
Hand Rail, Sargent's.....\$0.25 & 10¢							
Hand Rail, H. & T. Mfg. Co. ....\$0.20 & 10¢ & 75¢							
Hand Rail, Am. Screw Co.....\$0.25							
Jack Screws, Millers Falls list.....\$0.50 & 5¢							
Jack Screws, P. S. & W.....\$0.25							
Jack Screws, Sargent's.....\$0.41 & 10¢ & 20¢ & 5¢							
Jack Screws, Stearns'.....\$0.40 & 10¢ & 10¢							
Cork—							
Humason & Beckley Mfg. Co. ....40¢ & 10¢ & 50¢							
Williamson's.....\$0.20 & 25¢ & 25¢							
Hove Bros. & Hubert.....\$0.20							
Machine—							
Flat Head, Iron.....\$0.25							
Round Head, Iron.....\$0.25							
Wood—							
List January 1, 1891.							
Flat Head Iron.....72½¢							
Round Head Iron.....67½¢							
Flat Head Brass.....72½¢							
Round Head Brass.....65¢							
Flat Head Bronze.....73½¢							
Round Head Bronze.....65¢							
Rogers' Drive Screws.....\$0.25 & 5¢							
Screw Saws—See Saws, Scroll, Scythe.							
Scythes.							
Grain.....40¢ & 5¢ & 10¢ & 10¢							
Grass.....40¢ & 10¢ & 50¢							
Scythe Mounds—See Saws, Scythe.							
Sets.							
Aiol and Tool.							
Aiken's Sets, Awls and Tools, No. 20, \$ dos \$1.00.....\$0.50 & 10¢ & 10¢							
Fray's Adj. Tool Hdls., Nos. 1, \$12. 2, \$18, 2, \$18. 4, \$0. ....\$0.25 & 25¢ & 25¢							
Miller's Falls Adj. Tool Hdls., Nos. 1, \$12. 2, \$18.....\$0.25 & 25¢ & 25¢							
Henry's Combination Haft.\$ dos \$6.50							
Brad Sets, No. 42, \$10.50; No. 43, \$12.50....70¢ & 10¢ & 5¢							
Stanley's Excisor: No. 1, \$7.50; No. 2, \$4.00; No. 3, \$6.50.....\$0.20 & 10¢							
Nail—							
Square.....W. gr., \$4.00.....\$0.25 & 25¢							
Round.....W. gr., \$3.25							
Buck Bros.....\$0.27. 5¢							
Cannon's Diamond Point.....W. gr., \$12. 20¢							
Rivet,							
Regular list.....\$0.20 & 10¢							
Saw—							
Stillman's Genuine....\$ dos \$5.00 & 7.75, 10¢ & 5¢							
Stillman's Imita....\$ dos \$3.25 & 25¢							
Common Lever\$ dos \$2.00, 40¢ & 10¢							
Morrill's No. 1, \$15.00; Nos. 2 & 3, \$4.00, 40¢ & 10¢ & 20¢ & 10¢							
Leach's....\$ dos \$0.90; Nos. 1, \$15. 2, \$20 3, \$24. 10¢ & 20¢ & 10¢							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.00, 55¢							
Hart's Pat. Lever.....\$0.25							
Dissot's Star.....\$0.25							
Leopold.....\$0.40 & 10¢ & 50¢							
Atkin's Lever.....W. dos No. 1, \$6.00							
Atkin's Criterion.....W. dos No. 1, \$6.00							
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00.....\$0.25 & 10¢							
Avery's Saw Set and Punch.....\$0.50							
Chieftain H. R. Co.'s Superior.....\$0.50							
Hammer, Hotchkiss.....\$5.50, 10¢							
Hammer, Bemis & Call Co.'s new Pat. \$20 & 50¢							
Bemis & Call Co.'s Lever and Spring Hammer.....\$0.25 & 25¢							
Bemis & Call Co.'s Plate.....10¢							
Bemis & Call Co.'s Cross Cut.....\$0.25 & 25¢							
Aiken's Genuine.....\$13.00, \$62.10¢							
Aiken's Imitation.....\$7.							

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list..... 50@10%
Tapes, Measuring—
American..... 40@40@25%
Spring..... 40@
Chesterman's, Regular list..... 26@30%
Thermometers—
Tin Case..... 80@80@10%
Thimble Skeins—See Skeins.
Ties, Bale-Steel
Standard Wire, list..... 50@10@25%
Tinners' Shears, &c.—See Shears, Tinner's, &c.
Tinware—
Stamped, Jappanned and Pieced, list Jan. 20 1887..... 70@10@70@10@5%
Tire Benders, Upsetters, &c.—
See Benders and Upsetters, Tire.
Tools.
Coppers—
Bradley's..... 30@
Barton's..... 30@20@5%
L. & J. White..... 20@5%
Albertson Mfg. Co..... 25@
Beatty's..... 30@
Sandusky Tool Co..... 30@20@5%
Shaves, Cincinnati Tool Co..... 20@
Lumber.
Ring Peavies, "Blue Line"..... 20@20@
Ring Peavies, Common..... 20@18@
Steel Socket Peavies..... 20@21@
Mail. Iron Socket Peavies..... 20@16@
Cant Hooks, "Blue Line"..... 20@14@0
Cant Hooks, Common Finish, 20@14@0
Mail. Sockt Clasp, "Blue Line" Finish..... 16@0
Cant Hooks, Mail. Sockt Clasp, Common Finish..... 20@14@0
Cant Hooks, Clip Clasp, "Blue Line" Finish..... 20@14@0
Cant Hooks, Clip Clasp, Common Finish..... 20@12@0
Hand Spikes..... 20@6 ft., \$15.00; 8 ft., \$20.00
Pike Poles, Pike & Hook, 20@, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50.
Pike Poles, Pike only, 20@, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00.
Pike Poles, not ironed, 20@, 12 ft., \$6.00; 14 ft., \$7.00; 16 ft., \$8.00; 18 ft., \$12.00; 20 ft., \$16.00.
Setting Poles, 20@, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
Swamp Hooks.
Saw.
Atkins' Perfection..... 20@ dos \$17.00
Atkins' Excelsior..... 20@ dos \$6.00
Atkins' Giant..... 20@ dos \$4.00
Tobacco Cutters—See Cutters, Tobacco.
Transom Lifters—See Lifters, Transom.
Traps—
Game—
Newhouse..... 40@40@25%
Oneida Pattern..... 70@10@
Game, Blake's Patent..... 40@10@25%

Mouse and Rat—
Mouse Wood, Choker, 20@ dos holes, 11@12@
Mouse, Round Wire, 20@ dos 11@50, 10@
Mouse, Cage Wire, 20@ dos 12@50, 10@
Mouse, Catch-em-alive, 20@ dos 12@50, 15@
Mouse, Bonanza, 20@ dos 80@90@180@
Mouse, Delusion, 20@ dos 1@100@125@
Rat, Decoy, 20@ dos 10@100, 10@
Ideal, 20@ dos 10@100, 10@
Cyclone, 20@ dos 5@25@
Hotchkiss Metallic Mouse, 6-hole trap, 20@ dos, 90@; in full cases, 20@ dos, 75@
Hotchkiss Imp. Rat Killer, 20@ gro \$18.50
Hotchkiss New Rat Killer, 20@ gro \$16.50
Schuyler's Rat Killer, 20@ gro \$18.00
Trimmers, Spoke.
Bonney's..... 20@ dos \$10.00, 50@
Stearns'..... 20@10@
Ives', No. 1, \$15.00; No. 2, \$12.00 20@ dos
Douglas'..... 20@ dos \$9.00, 20@
Cincinnati..... 20@
Trewels—
Lothrop's Brick and Plastering, 20@10@5@25@
Reed's Brick and Plastering..... 15@
Diaslon's Br'k and Plastering..... 25@
Peace's Plastering..... 25@
Clement & Maynard's..... 20@
Rose's Br'k..... 15@20@
Brade's Br'k..... 25@
Worrell's Br'k and Plastering..... 20@
Garden..... 20@
Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82..... 40@
Tubes, Boiler—
See Pipe.
Twine—
Flax Twine—
BC. R.
No. 9, 1/4 and 1/2 B. Balls..... 26@ 24@
No. 12, 1/4 and 1/2 B. Balls..... 25@ 23@
No. 18, 1/4 and 1/2 B. Balls..... 22@ 20@
No. 24, 1/4 and 1/2 B. Balls..... 23@ 22@
No. 36, 1/4 and 1/2 B. Balls..... 20@ 21@
No. 264, Matrass, 1/4 and 1/2 B. Balls, 52@54@
Chalk Line, Cotton, 1/4 and 1/2 B. Balls..... 25@
Mason Line, Linen, 1/4 and 1/2 B. Balls..... 55@
2-Ply Hemp, 1/4 and 1/2 B. Balls (Spring Twine)..... 15@
3-Ply Hemp, 1/4 B. Balls..... 16@18@
3-Ply Hemp, 1/4 B. Balls..... 16@18@
Cotton Wrapping, 5 Balls to 20@ 16@ 20@ 2, 3, 4 and 5-Ply Jute, 1/4 B. Balls..... 10@
Wool..... 6@12@
Paper..... 13@14@
Cotton Mops, 6, 9, 12 and 15 B. to dos, 18@
Vises—
Solid Box..... 50@10@50@10@20@5
Parallel—
Fisher & Norris Double Screw..... 15@10@
Stephens'..... 20@20@
Wilson's..... 20@25@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@
Merrill's..... 15@20@
Sargent's..... 60@10@10@
Parker's..... 20@25@
Wilson's..... 55@
Howard's..... 40@
Bonney's..... 40@10@10@
Millers Falls..... 40@40@10@
Trenton..... 40@5@40@10@

